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# Canadian Journal of PUBLIC HEALTH

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Number 12

## A WINTER OUTBREAK OF POLIOMYELITIS IN NORTHERN ALBERTA

E. S. Orford Smith and Beatrice E. Cole

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## MEDICAL CARE FOR THE INDIGENT IN SASKATCHEWAN

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## ISOLATION OF STRAINS OF VIRUS B FROM TISSUE CULTURES OF CYNOLOGUS AND RHESUS KIDNEY

W. Wood and F. T. Shimada

## THE HOSPITAL IN THE PUBLIC HEALTH PLAN

Hazel I. Miller

## CHANGES IN THE POPULATION PATTERN AS REVEALED BY THE 1951 CENSUS

O. A. Lemieux

Index to Volume 45, 1954

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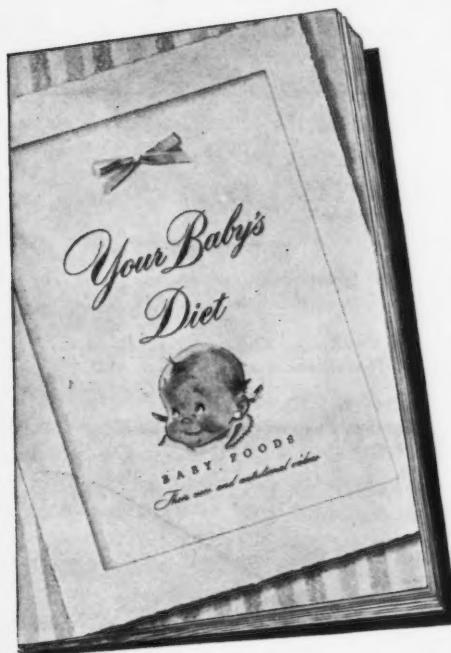
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# *Canadian Journal of PUBLIC HEALTH*

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## CONTENTS

### ARTICLES:

A Winter Outbreak of Poliomyelitis in Northern Alberta..... E. S. Orford Smith, M.B., B.Chir., D.P.H., and Beatrice E. Cole, B.Sc., R.N.	495
Medical Care for the Indigent in Saskatchewan. Part 2..... Milton I. Roemer, M.D., M.P.H., Carman P. Feader, and Murray S. Acker, M.D., D.P.H.	502
Isolation of Strains of Virus B from Tissue Cultures of Cynomolgus and Rhesus Kidney... W. Wood, M.B., B.S., and F. T. Shimada, B.A.	509
The Hospital in the Public Health Plan..... Hazel I. Miller, B.S., R.N.	519
Changes in the Population Pattern as Revealed by the 1951 Census..... O. A. Lemieux, Ph.D.	524

### EDITORIAL SECTION:

Dr. C.-E. A. Winslow Retires.....	533
-----------------------------------	-----

### DEPARTMENTS:

Vital and Health Statistics..... Frequency of Autopsy among Deaths in Ontario, 1953 A. H. Sellers, M.D., D.P.H., and Ina M. Judson	534
News.....	537
INDEX to Volume 45, 1954.....	i

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# *Canadian Journal of* **PUBLIC HEALTH**

VOLUME 45

TORONTO, DECEMBER 1954

NUMBER 12

## A Winter Outbreak of Poliomyelitis in Northern Alberta

E. S. ORFORD SMITH, M.B., B.Chir., D.P.H.  
and BEATRICE E. COLE, B.Sc., R.N.

*Provincial Department of Public Health, Edmonton, Alberta*

THE explosive increase in the number of poliomyelitis cases in Alberta during 1953 to almost eight times the average for the preceding ten years was the occasion for the appointment at the end of the year of a team to investigate the epidemiological aspects of the disease for the purpose of making recommendations for its control in the event of another epidemic. The following report represents only a small part of the studies which were undertaken.

In December 1953 an outbreak of poliomyelitis occurred in the Fort Vermilion district. By the end of January 1954 the number of reported cases had reached 16. Since the community is virtually an isolated one during the winter months, it was felt that a special study of this particular outbreak might afford more in the way of specific information than the general survey which was being planned for the Province. It was accordingly decided that the two field members of the team should fly in on February 3 and stay for ten days. By the end of this period a further five cases had occurred, bringing the total number studied to 21, although the outbreak continued until mid-March, involving 38 reported cases in all.

Fort Vermilion is the centre of a farming community of some 6,000 whites, Indians and Metis on the banks of the Peace River about 400 miles north of Edmonton and approximately 100 miles from the border of the North West Territories. Most of the whites live in homes comparable to those found in rural communities elsewhere in the Province. Many of the Indians and Metis, however, barely make a living, depending mostly on hunting and trapping in the winter and casual labouring in the summer; their shacks are frequently overcrowded and dirty, and their diet often lacks both variety and vitamins. The residents of the town obtain their water from the Peace River by carrier, and during the winter months it is delivered in the form of large blocks of

ice. Most of the farmers have private wells, while many of the Indians obtain their water in summer from streams and in winter from snow. In addition to a large Indian residential school there are two other schools in the town, and the whole community is served by a modern hospital of 35 beds operated by Roman Catholic nuns.

#### CLINICAL REFERENCES

Details of the cases studied are given in Table I. Six of the cases were non-paralytic, while of the paralytic cases 13 were spinal, one was bulbar and one was of a combined type showing cerebral involvement as well. The first two cases in the series were fatal; one of these was the combined cerebral and bulbo-spinal case and the other was a spinal case. Most of the paralytic cases, however, were mild and showed good or complete recovery. The median age of the cases was 11 years, and the sex incidence was in the proportion of one male to two females.

TABLE I

Serial No.	Initials	Age	Sex	Race	Date of Onset	Clinical Type
1*	E. C.	6.	M.	Indian	December 9	Encephalitic and paralytic bulbo-spinal
2*	B. L.	9/12.	F.	Metis	December 16	Paralytic spinal
3	E. W.	25.	M.	White	December 27	Non-paralytic
4	A. C.	4.	F.	Indian	December 28	Non-paralytic
5	H. L.	8.	M.	Metis	December 29	Paralytic bulbar
6	K. W.	22.	F.	White	January 8	Paralytic spinal
7	S. G.	17.	F.	White	January 9	Paralytic spinal
8	U. K.	11.	M.	White	January 10	Non-paralytic
9	A. J.	28.	F.	Metis	January 10	Paralytic spinal
10	R. G.	15.	F.	Indian	January 11	Paralytic spinal
11	B. W.	5/12.	F.	White	January 11	Paralytic spinal
12	T. L.	3.	M.	White	January 12	Non-paralytic
13	J. Y.	16.	F.	Indian	January 16	Non-paralytic
14	R. H.	8.	F.	Metis	January 18	Non-paralytic
15	N. M.	10.	M.	Metis	January 21	Paralytic spinal
16	H. C.	11.	F.	Indian	January 27	Paralytic spinal
17	E. M.	34.	F.	Metis	February 6	Paralytic spinal
18	M. C.	31.	F.	Indian	February 8	Paralytic spinal
19	S. M.	16.	F.	Metis	February 9	Non-paralytic
20	R. M.	13.	M.	Metis	February 9	Non-paralytic
21	H. L.	12.	F.	Metis	February 11	Paralytic spinal

\*—Fatal Case

#### EPIDEMIOLOGICAL INVESTIGATION

In each case either the patient or a closely related responsible person was interviewed regarding the patient's activities and movements during the four weeks preceding the onset of illness. Careful inquiry was also made for polio-like illness among family members and other intimate contacts both before and after the patient's illness, and in many instances these missed cases seemed to provide the links in the chain of infection.

The endeavours of the authors failed to attribute the outbreak to one single origin. Although conclusive proof was lacking, it appeared that two individuals, one a trucker who frequented the town of Peace River some 200 miles to the south, the other an Indian labourer who had been working outside the community, were probably responsible for introducing the infection. From

these probable sources two distinct paths of infection could be traced, as indicated in Figures 1 and 2.

Figure 1 represents the course of events which followed the return of the trucker (suspected case no. 1) on October 27 from an arduous trip to Peace River where four cases of poliomyelitis were reported between August 9 and December 1. On arriving home he complained of fever, general malaise and soreness of the shoulders. Twelve days later, on November 8, his small son (suspected case no. 2) had an upper respiratory infection accompanied by fever. The boy was visited at about this time by two of his cousins, one of whom (suspected case no. 3) fell sick with fever, lethargy and pains in the legs towards the end of November, and the other (suspected case no. 5) with fever, headache and vomiting during the early part of December.

This last suspected case is believed to have been the source of infection of his uncle E. W. (case no. 3), who developed poliomyelitis on December 27, and of his sister (suspected case no. 7), who developed symptoms of influenza on December 28 and passed on the infection to her baby sister (case no. 11), who developed poliomyelitis on January 11. A married woman (suspected case no. 6) was in contact with suspected case no. 5 at the time of his illness. This woman fell sick with fever, severe headache, generalized muscular pains, nausea and vomiting on December 23 and was confined to bed for one week; her son T. L. (case no. 12) subsequently developed poliomyelitis on January 12. She prepared some sandwiches for a local dance on December 30, and although she attended the dance for only a short time she chatted for a few minutes to A. J. (case no. 9), a woman who developed poliomyelitis on January 10. It is noteworthy that of the several persons who presumably consumed the food A. J. was the only one to contract the disease.

Two Indian girls, R. G. (case no. 10) and J. Y. (case no. 13), who slept in adjacent beds in the residential school, developed poliomyelitis on January 11 and 16 respectively. These girls had limited social contacts, but R. G. attended a free show on December 31; this was a very crowded gathering, and it is reasonable to suppose that she may have rubbed shoulders with the elder brother of suspected cases no. 3, no. 5 and no. 7 who was in all probability carrying the virus at this time (suspected carrier no. 2). It is presumed that J. Y. was infected by R. G. It is of incidental interest that 65 girls sharing the same dormitory and using the same dining room received gamma globulin immediately after the second of these two cases and that no symptoms were reported among them. An 11-year-old schoolboy, U. K. (case no. 8), and an 8-year-old schoolgirl, R. H. (case no. 14) were also at this free show and subsequently developed poliomyelitis on January 10 and 18 respectively. H. C. (case no. 16), a classmate of U. K., developed headache, fever, pain in the back and neck stiffness on January 27, and was diagnosed as a mild spinal case.

E. W. (case no. 3) proved to be the forerunner of a considerable number of further cases. This man, who was a farmer, spent a few days in the town during the Christmas season. On December 27, the day he fell sick, K. W. (case no. 6), a hospital ward-aide, was visiting the same house as he and developed poliomyelitis on January 8; it is likely, that symptoms were present earlier than this, but were obscured by severe toothache which necessitated a

dental extraction on January 8. S. G. (case no. 7) shared a room with K. W. in the hospital staff quarters and developed poliomyelitis on January 9. Another hospital worker (suspected case no. 9) sat next to K. W. at meals, and developed moderately severe headache, slight sore throat and aching in the arms and shoulders on January 16. Although absent from work for only one day, she is believed to have been the intermediary between K. W. and S. M. (case no. 19), who sat on the other side of her at meals and who fell sick with poliomyelitis on February 8.

Another Christmastide contact of E. W. was a Metis trapper (suspected case no. 8) whom he met in a garage and who subsequently developed headache, slight fever, sore throat, vomiting, diarrhoea and generalized muscular pains on January 3. This trapper's son N. M. (case no. 15) developed poliomyelitis on January 21. Suspected carrier no. 3 was a frequent visitor at the trapper's house and also at the home of E. M. (case no. 17), who developed poliomyelitis on February 6, and as there was no direct contact between the families concerned he is believed to have transmitted the infection from one to the other. R. M. (case no. 20) was the nephew of E. M. and visited her frequently, sometimes staying for a meal; he developed an illness on February 9 which was

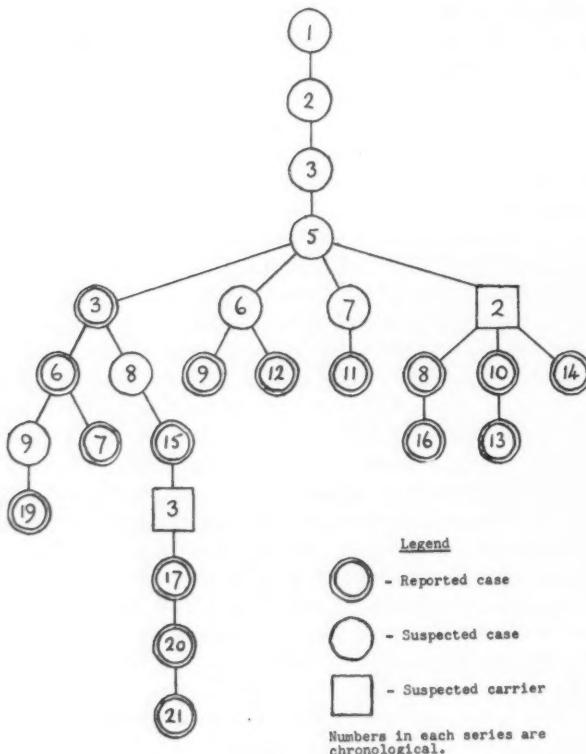


FIGURE 1

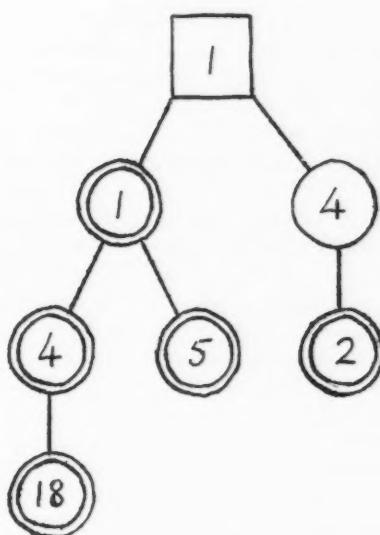


FIGURE 2  
Legend as for Figure 1

diagnosed as an abortive case. H. L. (case no. 21) was a classmate of R. M. at school, and fell sick with poliomyelitis on February 11.

Figure 2 represents the independent chain of infection which followed the return of the Indian labourer (suspected carrier no. 1) to his community. On November 29 he attended a dance in the company of his cousin (suspected case no. 4), who was the mother of a 9-month-old baby. She became sick on December 7 with symptoms of influenza, and her baby B. L. (case no. 2) subsequently developed poliomyelitis on December 16. This child died on February 1 from pulmonary complications.

The labourer's son E. C. (case no. 1) developed a febrile illness on December 9 and during the next three weeks he developed diplopia, dysphagia and progressive difficulty in walking. He was not seen by a doctor until December 28; on this date he was hospitalized and on January 4 he died. By the time of his hospitalization his sister A. C. (case no. 4) had also begun to develop symptoms, and was diagnosed as poliomyelitis a day or two later. During the time E. C. was still at home he was constantly visited by his cousin H. L. (case no. 5), who lived only a short distance away and who developed unilateral sternomastoid paresis on December 29.

M. C. (case no. 18), mother of cases no. 1 and no. 4, proved particularly interesting. She was given gamma globulin on December 31 and in spite of the fact that she was pregnant did not develop poliomyelitis until six weeks after her daughter, on February 8. Sanitation in the shack in which this Indian family lived was most primitive, and since the virus rarely persists in the pharynx for more than ten days after onset it is believed that the woman must have infected herself through handling her daughter's stools at a time when the prophylactic effect of gamma globulin was diminishing.

### CONCLUSIONS

Thus in nine of the 21 cases it was established that there had been direct contact with another known case of poliomyelitis in the acute phase. In seven cases there had been direct contact with a case of illness resembling abortive poliomyelitis but never seen by a physician. In the remaining five cases there had been contact with a person who was believed to have been a healthy carrier.

The circumstances of contact in each of the cases described except one appear to indicate droplet infection as the most probable mode of transmission. However in cases no. 2, no. 9, no. 12 and no. 20 it is equally possible that infection occurred as the result of ingestion. In one instance alone, that of case no. 18, is ingestion considered to provide the only possible explanation. Assuming that the virus may be present in the pharynx for up to five days before the onset of symptoms, the incubation period in the cases considered attributable to droplet infection varied between 6 and 23 days.

A noteworthy feature of the Fort Vermilion epidemic is that, with the exception of one reported case, all the persons involved in Figure 1 lived south of the river in or near the town, and that, with the exception of one suspected case and one reported case, all the persons involved in Figure 2 lived several miles north of the river and seldom went into town. R. H. (case no. 14) was the only northerner in Figure 1, but had crossed the frozen river on the occasion of the free show. M. L. (suspected case no. 4) and B. L. (case no. 2), her daughter, were the only southerners in Figure 2, but the dance attended by M. L. and her cousin had been held some ten miles north of the river in the district in which the northern outbreak occurred.

The inference drawn by the authors from the nature of the individual relationships described in this study is that poliomyelitis is contracted through direct contact with a person carrying the virus, most commonly as the result of airborne transmission. The distribution of the cases into two distinct patterns having a geographical significance offers further support for the belief that the infection follows narrow channels of spread. Since the mean temperature at the time of this outbreak was well below zero, it is certain that flies can have played no part in the spread of infection.

Other winter epidemics of poliomyelitis occurring in isolated communities have been described by several writers, including Adamson *et al.* (1), Peart (2) and Peart *et al.* (3). Transmission through direct personal contact with cases or carriers is favoured by all these writers. The importance of direct personal contact has also been demonstrated most convincingly by Agerholm (4) in her description of an outbreak of poliomyelitis under different climatic conditions in the Isle of Wight.

### SUMMARY

A description has been given of the epidemiological features of a winter outbreak of poliomyelitis in an isolated community in Northern Alberta. Transmission is considered to have occurred through direct personal contact with known or suspected cases or carriers, most commonly as the result of droplet infection.

## ACKNOWLEDGMENTS

The authors wish to express particularly their gratitude for the co-operation which they received from Dr. Julius Kratz and Dr. Hanna Kratz in Fort Vermilion. They also wish to thank Dr. A. Somerville, Deputy Minister of Health in the Province of Alberta, for permission to publish this article.

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# Medical Care for the Indigent in Saskatchewan

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## PART 2

### *The "Epidemiology of Medical Care"*

With the aid of a National Health Grant, detailed statistics are kept on services rendered in this comprehensive medical care program, and they present a rich opportunity for analysis of what might be called the epidemiology of medical care. Only a few observations can be made here.

With time and experience, there tends to be a gradually increased utilization of physicians' services. Total physicians' calls at the office, home, and hospital, for example, rose from 7,196 per 1,000 persons per year in 1948 to 8,372 per 1,000 in 1953. Moreover, between 1950 and 1954, the percentage of beneficiaries receiving some service during the year rose from 65.4 to 81.6 per cent. This tends to contradict the frequent contention that the introduction of a new program of medical care insurance would be associated with a high volume of service, for care of the backlog of untreated disabilities, which would then decline as needs were met. This theory seems to be borne out in the experience of the dental and the optical services, where defects are relatively static and cumulative. For other health needs, however, as met by the services of physicians and the prescription of drugs, the influence of experience and education seems to predominate and lead to steadily increased utilization of services.

It is sometimes contended that a publicly financed or a prepayment medical care program can lead to heavy demands on the physician for home calls by day and night, especially if there is no deterrent charge against such requests. Actually it may be noted that in 1952-53 there were 8,372 physician's calls per 1000 beneficiaries per year, of which only 895 or less than one-ninth were at the patient's home, the remainder being at locations convenient to the doctor. This is probably an improvement over the relationships in purely private medical practice.

The influence of physical accessibility of doctors on the receipt of medical care is clearly demonstrated in this program. Counting all physicians' services, the rates by place of residence of the beneficiary in 1953 were as follows (in terms of services for 1000 persons per year): rural—7,577; village—8,246; town—9,906; and city—11,315. The same relationship is found for drug prescriptions, ranging from 3,612 per 1,000 persons per year in the rural

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locations to 5,927 per 1,000 in the cities. For diagnostic procedures, the differential between rural and urban is even more striking, being about 2:1 between cities and rural locations. There is no question that these differences are related to the greater proportionate number of doctors and the easier travelling conditions to them in the more urban settlements. In dental health the impact of rural living is strikingly demonstrated by the fact that for fillings the experience of city residents is much greater than rural, while for extractions it is exactly the opposite.

The age and sex differentials for medical services received, with economic barriers removed, are probably a fairly close reflection of actual morbidity. For physicians' calls and surgical operations, these are shown in Table VII. The steadily rising volume of physicians' calls with age, after mid-life, is striking. For both sexes, the healthiest age group appears to be 5-14 years, and yet these are the years during which we exert such special efforts through organized school health services. Surgical operations, on the other hand, in both sexes reach their apex in the 25-44 year age period. For optical services, principally the prescription and fitting of eyeglasses, the general rate for all ages is 326 for 1,000 persons per year, with a gradual rise toward a peak of 496 at the 45-64 year age group, and a decline thereafter.

As for seasonal incidence of medical services, our data do not reveal any

TABLE VII  
PHYSICIANS' SERVICES FOR LONG-TERM PUBLIC ASSISTANCE  
BENEFICIARIES: RATE BY AGE AND SEX OF RECIPIENTS, 1953

Age Group and Sex	Physicians' calls (rate per 1000)	Surgical operations (rate per 1000)
Both sexes	8,372	137
Under 1 year	3,168	45
1-4	3,171	64
5-14	1,889	111
15-24	2,211	132
25-44	6,084	249
45-64	6,571	159
65-69	8,183	146
70 and over	11,331	139
Males	8,497	160
Under 1 year	5,116	101
1-4	3,368	87
5-14	1,831	111
15-24	2,073	117
25-44	9,798	238
45-64	7,772	163
65-69	6,287	155
70 and over	10,944	179
Females	8,268	118
Under 1 year	1,605	..
1-4	2,978	41
5-14	1,948	111
15-24	2,321	144
25-44	5,349	251
45-64	6,229	158
65-69	8,783	143
70 and over	11,745	96

striking correlations. The high month in the 1952-53 fiscal year, by a slight margin, was May and the low month, February. If anything, this probably reflects ease of travel rather than frequency of illness.

Experience in the program by diagnostic categories is difficult to assess because services are recorded by specific medical acts, rather than by cases of illness in the patient. Among surgical operations, it may be recorded that the most frequent are the following (in terms of the rate per 1,000 persons per year), as of 1953: closed reduction of a fracture—10.6; prostatectomy—10.3 per 1000 males; tonsillectomy—8.0; herniotomy—5.3; appendectomy—4.3; uterine curettage—4.3 per 1000 females; and cholecystectomy—2.5.

#### *Costs*

Good medical care is not cheap. The program for the indigent in Saskatchewan costs the Provincial Government currently over \$80 per beneficiary per year. With the rising volume of care and the rising cost of purchasing an item of medical, hospital, or related service, there has been a steady rise in the cost of the program per beneficiary since its inception in 1945. The total expenditure rose from \$737,000 in the 1945-46 fiscal year to \$2,844,000 in 1952-53.

Much the largest share of the total cost is referable to hospitalization. The breakdown of expenditures for services is given in Table VIII. It is illuminating to note that in 1950-51 the Canadian Sickness Survey found an average expenditure for health services by family units in the Prairie Region of \$77 per year. For individuals, this figure would probably come to about \$25—or about one-third of the per capita expenditure in the Saskatchewan program for the indigent. This enormous difference is obviously due in part to the skewed age distribution of the indigent group, with its heavy concentration of the very old and the very young, in whom illness needs are biologically greatest. It is due also to the greater medical and social problems (some of which are solved simply by prolonged hospitalization) in persons of low income. But it is undoubtedly also a result of the basic philosophy of eliminating the cash nexus and attempting to meet the medical needs expressed—needs which among non-protected groups are hidden behind financial barriers.

TABLE VIII  
COSTS OF HEALTH SERVICES FOR LONG-TERM PUBLIC  
ASSISTANCE BENEFICIARIES, BY TYPE OF SERVICE, 1953

Type of service	Total	Per capita
All services	\$2,429,191	\$81.22
Physicians	395,409	13.22
Dental	70,531	2.36
Optical	59,804	2.00
Nursing	9,977	0.33
Drugs and appliances	230,968	7.72
Physiotherapy	1,105	0.04
Chiropody	4,415	0.15
Hospitalization	1,656,981	55.40

In any organized medical care program in which physicians and others are paid on a fee-for-service basis, there are always difficulties in the determination of fees equitable from the viewpoint of the practitioner and the paying agency. In the last analysis, however, the test of the equity of a fee schedule, and the per capita funds budgeted to support it, is the average annual income that it yields for medical and related personnel—or the income it would yield if this rate of remuneration governed the practitioner's total practice. On this basis, it may be observed that in the 1952-53 fiscal year, the average earnings of 591 Saskatchewan physicians participating in the program for the long-term beneficiaries (95 per cent of the total in practice) were \$759.13. These beneficiaries constituted 3.5 per cent of the total population of the province, but the earnings were 4.6 per cent of the average gross income of Saskatchewan physicians. This figure in 1951 was approximately \$16,635, based on Income Tax Department reports of net income of Saskatchewan doctors (\$10,480) and allowance of 37 per cent overhead expenses reported in studies of the Department of Trade and Commerce. Thus, if physicians in Saskatchewan earned for all their patients an income at the rate earned for their indigent beneficiaries, their gross intake would be considerably greater. The same conclusion is reached by calculating what the earnings of physicians in the province would be if the entire population were covered by a pre-payment fund of \$15 per capita (the amount used in the public assistance program). On this basis, for the 621 practising physicians in the province, as of December 1953, average gross annual income would be \$21,000, or 26 per cent greater than the 1951 amount.

Such reasoning must be qualified by the reminder that the public assistance beneficiaries have a higher than average morbidity load, both by virtue of age composition and social condition, than the population average. On the other hand, without governmental assistance, earnings from this social group would undoubtedly be below the average for the population as a whole. Payments, up to an average of \$15 per capita, moreover, are assured to physicians without the necessity of any charity service or uncollected bills. One can conclude that the remuneration to physicians in Saskatchewan at the present time is generous.

A word may be said about administrative expenses. For the 1952-53 fiscal year they represented 8.7 per cent of the total budget of the Medical Services Division. This may strike some critics as high, especially in relation to the administrative costs of programs financing only one class of service, like hospital care or physician's services alone. In this program, however, it must be kept in mind that there are eight classes of health service and seventeen categories of beneficiary, and innumerable details apply to each of these fee-for-service relationships. It costs as much to process a drug prescription assessed at \$1 as it does for a surgical or hospital bill at \$100; yet there are twice as many drug as medical accounts to handle each month. In fact, if over-all administrative costs of health services to the indigent are computed, including the hospital accounts paid by the Saskatchewan Hospital Services Plan, administration requires only 5.5 per cent of the total expenditure.

*The Quality of Service*

What may be said about the quality of medical service received in this program? Obviously the principal influences on the quality of services for public assistance beneficiaries lie not within this program at all, but in the sphere of professional education, availability of hospitals of good quality, the self-discipline of the health professions, and the impact of laws and custom. Within the program itself, however, certain policies undoubtedly affect the quality of care.

Only duly licensed medical practitioners, for one thing, are authorized; no payments are made to chiropractors, osteopaths, or other such practitioners. No prior approval is required for surgical operations nor does access to a specialist require referral by a general practitioner, but in the physician's Fee Schedule certain services command higher fees for a qualified specialist. Regulations permit the review of pathological specimens by the Medical Director of the program, although this is seldom done. The detailed review of accounts by the Central Medical Assessment Board has a continuing impact on the handful of physicians who may be inclined to render unnecessary services. Assessments in April, 1954, for example, yielded a reduction of about 9 per cent in the accounts to be paid, and the influence of such reductions on future professional performance is perhaps more important than the financial savings. While there is free choice of practitioner, there is provision on the beneficiary's Health Services Card for a brief statement of principal diagnoses by the attending physician, and this tends to discourage the patient from "shopping around".

The requirement of medical authorizations for appliances, special nurses, physiotherapy, and drugs, is a control over quality as well as funds. New and unproven drugs are not allowed as benefits until approved by the Drug Advisory Committee. Optical services call for prior administrative approval and dental services are subject to considerable surveillance by a competent dental official. A master chart of every patient's mouth is kept in the Medical Services Division, so that any new prosthetic service contemplated can be properly evaluated before approval. The descriptive pamphlet sent to beneficiaries helps acquaint them with the services available and how to seek them. Service and cost statistics serve as a continuous guide to the administration on problems that may warrant attention.

Ultimately, it is impossible to separate, in an evaluation, the quality from the quantity of medical services. The absence of needed medical care, because of poverty, is surely the negation of quality. In this sense, the simple availability of medical care under this program means a generally higher quality of service than would otherwise be had by these low-income beneficiaries. On the other hand, some may claim that there is excessive medical care in certain categories. The charge is sometimes made that beneficiaries go to the doctor to pass the time of day and consume medical time needed for more serious cases. But it is difficult to believe that any patient will visit the doctor without being driven by some need, even if it is psychological or psychosomatic. Modern medicine must take account of such health problems. In fact, there is perhaps more evidence of under-use than over-use of services in the program, when it is realized that in 1952-53 some 24.8 per cent of the long-term bene-

ficiaries did not secure a single service of any type during the year, and 38.5 per cent did not consult a doctor at all. The impact of all classes of service on beneficiaries is shown in Table IX.

Once under medical attention, the public assistance beneficiary in Saskatchewan probably receives the same quality of service as other persons. There is little evidence of his being treated as a "second-class citizen", and it is to the credit of the health professions of the province that very few complaints are received from patients.

TABLE IX

RECEIPT OF HEALTH SERVICES: PERCENTAGE OF LONG-TERM PUBLIC ASSISTANCE BENEFICIARIES RECEIVING SPECIFIED SERVICES AT LEAST ONCE DURING THE YEAR, 1953

Type of service	Percentage
Any health service	75.2
Physician's care	61.5
Drugs	47.1
Dental care	11.8
Optical care	16.4
Special nurses	0.1
Chiropody	1.5
Hospitalization	25.5*
Hospital care (extra services)	9.1
Other	1.1

\*Estimated from data of the Saskatchewan Hospital Services Plan.

#### *Health Department Administration*

Elsewhere on this continent it is commonplace for programs of medical care to the indigent to be administered by agencies other than the Department of Public Health. When responsibility lies in a Department of Social Welfare, perhaps the Welfare Administrator can claim certain advantages in the way of an integrated social service. Certain other advantages may be claimed for administration by independent commissions. From our viewpoint, however, there are health values possible from public health agency administration not gained in other ways.

The Department of Public Health can maintain an objective, yet informed, attitude in relationships with the various health professions and facilities (physicians, dentists, nurses, pharmacists, hospitals, physiotherapists, etc.) concerned in a comprehensive service. There may be competitive demands on the available funds or pressures of other kinds which the Health Department can arbitrate with sophistication and with devotion solely to the interest of the patient's health. In public health agencies, as nowhere else, are to be found a concentration of health professional personnel—physicians, nurses, dentists, and others—trained in medical administration and giving their full professional lives to these duties. Relationships are being continuously maintained, moreover, with the various health professions and facilities in the province on other specific programs, so that personal understanding between practitioner and government can be better achieved.

Then, there are opportunities and incentives for promoting preventive services, under public health agency administration. In Saskatchewan, the

lack of any deterrent fees or procedures for the procurement of medical care has been motivated by preventive considerations, in the interest of encouraging prompt medical attention before ailments become serious. The descriptive pamphlet sent periodically to all beneficiaries advises them of public health clinics and other preventive services available. Each year a letter is sent by the Dental Director to all Mother's Allowance recipients, advising them of the need for regular dental examinations of their children—services which are financed by the program. Dental fees, in fact, have been set so as to provide some small inducement to preventive care, as against extractions. Where special services are already furnished by government, like the Mental Health Clinics, the Physical Restoration Centers, or the Cancer Clinics in Saskatchewan, public assistance clients are channeled to them when necessary. The Provincial Public Health Laboratory is, of course, used for specimens at a lower cost than would be paid to private laboratories. On occasion, public health nurses are used for home investigation of difficult cases.

Admittedly the surface of preventive potentialities in the Saskatchewan program of medical care for the indigent has hardly been scratched. There is much yet to be done in way of health education, encouragement of periodic health examinations or screening tests, the organization of effective clinics for geriatric problems (at least in the larger cities), promotion of improved nutrition, accident control, and other measures of prevention for beneficiaries. The whole vista of rehabilitation for the aged and disabled has yet to be approached. As the province becomes completely covered with organized public health regions, and perhaps functional hospital regions as well, there may be possibilities of decentralizing certain functions in the medical care program which would permit them to be more closely integrated with preventive services. Payment of accounts may always be most efficient at a central level, but supervision over the delivery of services can be most successful if it is closer to the patients and the providers of care.

#### *Final Comment*

The program of medical care for the indigent in Saskatchewan provides a high volume of needed care to a disadvantaged section of the population. It utilizes the pattern of private medicine which serves the general population, although through financial support exercises certain controls over the quality and preventive content of services. It costs more money per capita than the self-supporting section of the population is apparently willing to spend on itself, and yet this is an investment in humanity which the people, through their chosen government, are able and willing to make. The impact of the program on the population and the health professions is too small to cause any significant changes in the overall scheme of medical care, but it is teaching administrative lessons which would doubtless be valuable in the application of organized medical services for broader sections of the Canadian population.

# Isolation of Strains of Virus B from Tissue Cultures of Cynomolgus and Rhesus Kidney

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IN 1932, a young physician carrying out research which involved the handling of rhesus monkeys became ill following a monkey bite on the hand (1, 4). Vesicular lesions developed around the wound and seventeen days later death occurred from ascending myelitis. Histological examination of tissues revealed an acute transverse myelitis affecting principally the gray matter of the middle and base of the posterior horns. Focal areas of necrosis were also observed in the lymph nodes draining the area bitten, the spleen, and adrenals. Gay and Holden (1, 3) and Sabin and Wright (4) independently isolated in rabbits a virus from brain material of this fatal case which closely resembled the virus of herpes simplex. This virus was designated "Virus B" by Sabin and Wright, and "Virus W" by Gay and Holden.

Later studies by Sabin and co-workers (5, 6, 7) indicated that rabbits were extremely susceptible to Virus B following intracerebral, intracutaneous, intratesticular, intraperitoneal, or corneal inoculation. Initial attempts in the U.S.A. to infect rhesus monkeys failed, but working with the same species in England, Sabin was able to demonstrate infection following combined intracutaneous and intraperitoneal inoculation, and following combined intracerebral and intraperitoneal inoculation. Only occasional mice and guinea-pigs inoculated by various routes became infected.

In 1939, Burnet and co-workers (8) reported that a strain of Virus B could be propagated on the chorio-allantoic membrane of the embryonated egg; the focal lesions were macroscopically and histologically similar to those produced by herpes simplex virus. More recently Reagan and colleagues (9, 10) transmitted Virus B to mice and hamsters.

The second reported fatal human case of Virus B infection was described by Sabin in 1939 (11). There have probably been more cases, for Rivers reports personal knowledge of four (12).

In spite of several attempts, no successful isolation of Virus B from monkeys was made until recently when Melnick (13) recovered a strain from tissue cultures of supposedly "normal" rhesus monkey kidney.

The purpose of the present paper is to report the isolation of six strains of Virus B during the bulk production of poliomyelitis viruses in "suspended cell" tissue cultures of cynomolgus and rhesus monkey kidney.

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## MATERIALS AND METHODS

### *Large-Scale Production of Poliomyelitis Viruses in Tissue Culture*

An outline of the procedure followed has been described previously by Farrell *et al.* (14). Briefly "Maitland-type" or suspended cell cultures of chopped monkey kidney were prepared in 5-liter rectangular Povitsky bottles. The nutrient medium employed was Synthetic Medium No. 199 of Morgan, Morton and Parker (15), shown by Rhodes and colleagues to be well suited to the study of poliomyelitis viruses in tissue cultures (16, 17, 18).

In the majority of cultures prepared, one and a half rhesus or cynomolgus monkey kidneys, 5 to 8 gm. in weight, were chopped and added to a bottle containing 500 ml. of Medium No. 199. Cultures were then incubated for 6 days at 37°C. on a rocking machine which gently agitated the fragments of tissue. At this time, the culture fluid was changed and 2 ml. of a "seed pool" of Type 1 (Mahoney), Type 2 (M.E.F. 1), or Type 3 (Saukett) poliomyelitis virus, all prepared in tissue culture, were added. Incubation at 37°C. was continued for a further four days, when the fluids were harvested from a group of 6 to 12 cultures and pooled in a 10-litre bottle. Such 'pools' of virus were stored at 2-4°C. until the results of potency, typing, sterility, and animal inoculation tests became known.

### *Technique of Poliomyelitis Virus Assay and Typing*

Roller tube cultures of monkey kidney tissue were prepared by the method described by Dulbecco (19) and modified by Youngner (20), in which a fine suspension of kidney tissue is prepared by treatment with trypsin. A 1:200 suspension of the cells was finally prepared in medium No. 199, and 0.5 ml. pipetted into 150 mm. by 16 mm. rimless test tubes. These cultures were incubated at 37°C. without rotation for a period of five to eight days, when a 'monolayer' sheet of epithelial cells covered the lower one-third of the tube.

For assay purposes, serial tenfold dilutions of the poliomyelitis virus pool were made in Medium No. 199 and dilutions from  $10^{-4.0}$  to  $10^{-8.0}$  were inoculated into groups of five cultures. Each culture received 0.2 ml. of the appropriate virus dilution and 1.8 ml. of Medium No. 199. Cultures were incubated at 37°C. in a rotating drum and were examined microscopically four and seven days later for the characteristic cytopathogenic changes caused by the intracellular proliferation of the virus. Fifty percent endpoints were calculated by the method of Kärber.

The identity of each virus pool was confirmed by carrying out a virus neutralization test. For this purpose hyperimmune monkey sera of the immunologic types Brunhilde (Type 1), Lansing (Type 2), and Leon (Type 3) were used. The 50 percent neutralizing endpoints of these immune sera were approximately  $10^{-4.0}$  when tested with 100 TCD<sub>50</sub> of homologous virus. In the actual typing tests the poliomyelitis virus pool being examined was diluted  $10^{-3.0}$  and then mixed with 1:10 dilutions of normal monkey serum, Type 1 immune monkey serum, Type 2 immune monkey serum, and Type 3 immune monkey serum. The virus-serum mixtures were held at room temperature for one and a half hours, and five culture tubes were inoculated with 0.2 ml.

of each mixture together with 1.8 ml. of Medium No. 199. After incubation at 37°C. for seven days in a rotating drum, the cultures were examined and 50 percent neutralizing endpoints were calculated by Kärber's method.

#### *Tests in Rabbits for the Presence of Virus B in Pools of Poliomyelitis Virus*

It was anticipated at the outset of these studies that "poliomyelitis virus fluids" produced from cultures of monkey kidney might also contain Virus B. Accordingly samples from each pool prepared were inoculated into one rabbit intracerebrally (0.25 ml.) and into the scarified cornea of another rabbit (0.1 ml.). The animals were observed for a period of two weeks. If sickness or keratitis developed, the animal was killed and portions of brain, spinal cord, and cornea were removed, fixed in formalin, and submitted for histological examination. Later, the host range of the viruses isolated was determined by inoculation of guinea-pigs, hamsters, mice and monkeys.

### RESULTS

#### *Isolation of Six Virus B Strains*

The data on those six pools of poliomyelitis virus which were also found to contain Virus B are shown in Table I. It will be noted that five of the pools were prepared from cultures of rhesus monkey kidney tissue, and one from the kidney of a cynomolgus monkey. There is no reason to postulate that this reflects a greater frequency of Virus B infection in rhesus monkey, for approximately 90% of the animals used in this study were of this species.

The cultures yielding pool 36-2 had been seeded with Mahoney virus; those forming pools 61-2 and 178-2 had been seeded with M.E.F.1 virus, and those forming pools 56-1, 118-3 and 132-3 with Saukett virus. It is interesting that the poliomyelitis virus titres were found to be in the range  $10^{-6.1}$  to  $10^{-6.9}$ , not essentially different from the titres of pools uncontaminated with Virus B. The presence of Virus B was suggested by the results of the typing tests of these pools. The pools produced degenerative changes in the epithelial out-growth similar to those associated with the proliferation of poliomyelitis viruses; viz., after a brief phase in which the cells became more refractile and slightly globular, rapid cell necrosis occurred, and after approximately 48 hours only ill-defined 'ghost' forms are seen. These changes were not, however, inhibited by any of the three type-specific sera.

By performing parallel titrations on each pool with and without admixture with homotypic poliomyelitis immune serum, poliomyelitis and Virus B could be titrated independently. As Table I shows, the Virus B titres were all greater than  $10^{-3.0}$ . By subculture of material from each pool in the presence of homotypic poliomyelitis immune serum, it was possible to prepare tissue culture pools of the Virus B strains alone; these pools were referred to as "A".

#### *Host Range of Strains Isolated*

Rabbits, guinea-pigs, mice, hamsters, and monkeys were inoculated by the routes indicated in Tables II, III, and IV. Rabbits were extremely susceptible, and after corneal or intracerebral inoculation, encephalitis rapidly developed and the animals died between the 5th and 8th day (Table II). Keratitis regu-

TABLE I  
CULTURE AND TITRATION DATA ON 6 TISSUE CULTURE POOLS OF POLIOMYELITIS VIRUS CONTAINING VIRUS B

Designation of virus pool	Species of monkey yielding kidney tissue	Number of monkeys yielding kidney tissue	Number of cultures prepared	Poliomyelitis strains used to seed cultures	Volume of virus pool (litres)	Titre of poliomyelitis virus (tissue culture)	Titre of Virus B (tissue culture)	Rabbit test for Virus B
36-2	Cynomolgus	10	12	Mahoney	5.25	$10^{-6.5}$	$10^{-3.0}$	Positive
56-1	Rhesus	7	12	Saukett	6.8	$10^{-6.7}$	$10^{-4.7}$	Positive
61-2	Rhesus	9	12	M.E.F.1	7.1	$10^{-6.4}$	$10^{-3.1}$	Positive
118-3	Rhesus	8	10	Saukett	7.4	$10^{-6.9}$	$10^{-4.1}$	Positive
132-3	Rhesus	6	9	Saukett	6.6	$10^{-6.9}$	$10^{-5.9}$	Positive
178-2	Rhesus	7	9	M.E.F.1	7.6	$10^{-6.1}$	$10^{-3.3}$	Positive

TABLE II  
HOST RANGE OF VIRUS B STRAINS ISOLATED: RABBITS

Number of Animals	Route of Inoculation	Volume Inoculated	Fluid Inoculated	Clinical Course of Animals
2	Intra-testicular	0.25 ml.	36-2 Pool A	<ol style="list-style-type: none"> <li>Testis swollen and red 7th day. Paralyzed left hind leg 9th day. Survived.</li> <li>Testis swollen and firm 6th day. Paralyzed left hind leg 9th day. Survived.</li> </ol>
2	Intradermal	0.25 ml.	36-2 Pool A	<ol style="list-style-type: none"> <li>Vesicles over inoculated area 4th day Large haemorrhagic ulcer 10th day Survived for 3 weeks.</li> <li>Vesicles 4th day, large ulcer 9th day. All limbs paralyzed 11th day. Died 11th day.</li> </ol>
2	Intra-cerebral	0.25 ml.	56-1 1st Rabbit Passage Material	<ol style="list-style-type: none"> <li>Tremors and convulsions 7th day. Died 7th day.</li> <li>Incoordination and convulsions 8th day. Died 8th day.</li> </ol>
2	Corneal	0.1 ml.	36-2 Pool A	<ol style="list-style-type: none"> <li>Cornea opaque 4th day. Convulsions and death 5th day.</li> <li>Keratitis 4th day. Convulsions and death 7th day.</li> </ol>

larly preceded the encephalitis in those animals inoculated by corneal scarification. Histologically, there was invariably some degree of meningeal reaction, mainly monocellular in type; scattered throughout the cerebral cortex were areas of neuronal necrosis, the affected cells often showing intranuclear inclusion bodies in various stages of development. Not infrequently the pyramidal cells of Ammon's horn were affected (Fig. 1).

Following intradermal inoculation, vesicles developed, and those rapidly coalesced to form a large haemorrhagic ulcer. In one animal, limb paralysis developed and death occurred on the 11th day; there were small foci of necrosis in the liver as well as encephalitis and myelitis. The animals inoculated by the intratesticular route (on the right side) both developed paralysis of the left hind leg but survived for a period of three weeks.

Four guinea-pigs were inoculated, two by the corneal route and two intradermally (Table III). The animals inoculated corneally remained well, while the others both developed skin lesions, followed in one animal by fatal hind-leg paralysis.

Of 20 mice inoculated intracerebrally, five died between the 10th and 12th days (Table IV). Death was preceded in two animals by muscle spasm and twitching, but no definite paralyses were observed.

Hamsters were extremely susceptible; the four animals which were inoculated by the intracerebral route all developed encephalitis, and died from the 3rd to the 6th day (Table IV). Of two animals inoculated by the intradermal route, one remained healthy and the other developed skin vesicles followed by paralysis of the right hind leg. Death occurred on the 18th day. The histological

TABLE III  
HOST RANGE OF VIRUS B STRAINS ISOLATED: GUINEA-PIGS AND MICE

Animals Inoculated	Route of Inoculation	Volume Inoculated	Fluid Inoculated	Clinical Course of Animals
Guinea-pigs (2)	Corneal	0.1 ml.	36-2 Pool A	1. Remained healthy 2. Remained healthy
Guinea-pigs (2)	Intradermal	0.25 ml.	36-2 Pool A	1. Vesicle on skin 6th day. Pustules on skin 9th day. Survived. 2. Vesicles 5th day. Pustules 8th day. Paralyzed hind legs 14th day. Died 19th day.
Mice (10)	Intra-cerebral	0.03 ml.	118-3 Pool A	3 animals sick 10th day. Died 11th day. Remaining animals healthy.
Mice (10)	Intra-cerebral	0.03 ml.	132-3 Pool A	2 animals sick 11th day. Died 12th day. Remaining animals healthy.

changes in the brain were essentially similar to those in the rabbit, and intranuclear eosinophilic inclusions were frequently observed in the neurones.

One rhesus and one cynomolgus monkey were inoculated intracerebrally. Both remained healthy for a period of four weeks (Table IV). Following intradermal inoculation, vesicles developed in three to five days, but there was no apparent dissemination of the infection and the animals survived for four weeks.

TABLE IV  
HOST RANGE OF VIRUS B STRAINS ISOLATED: HAMSTERS AND MONKEYS

Animals Inoculated	Route of Inoculation	Volume Inoculated	Fluid Inoculated	Clinical Course of Animals
Hamsters (2)	Intra-cerebral	0.1 ml.	56-1 1st Rabbit Passage	1. Incoordination 5th day; completely paralyzed and died 6th day. 2. Tremors 5th day. Found dead on 6th day.
Hamsters (2)	Intra-cerebral	0.1 ml.	36-2 Pool A	1. Found dead 3rd day. 2. Tremors 4th day. Paralyzed all limbs 5th day. Killed.
Hamsters (2)	Intradermal	0.2 ml.	36-2 Pool A	1. Vesicles on skin 4th day. Paralyzed right hind leg 6th day. Died 18th day. 2. Remained healthy.
M. rhesus M. iris	Intracerebral	0.8 ml.	36-2 Pool A	Both animals remained healthy
M. rhesus M. iris	Intradermal	0.4 ml.	36-2 Pool A	Both animals developed multiple vesicles over injected area 5th day. Pustulation later, but no cerebral symptoms developed.

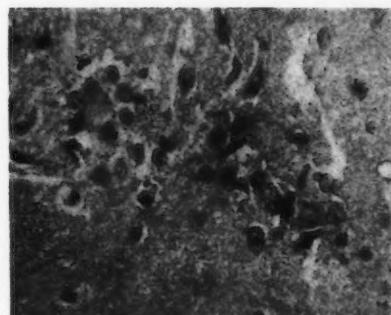


Fig. 1

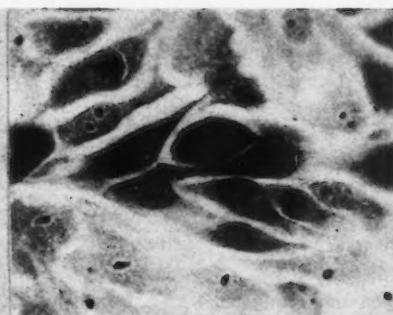


Fig. 2

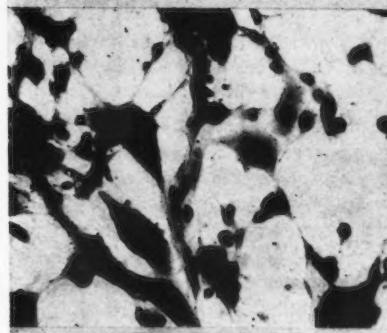


Fig. 3

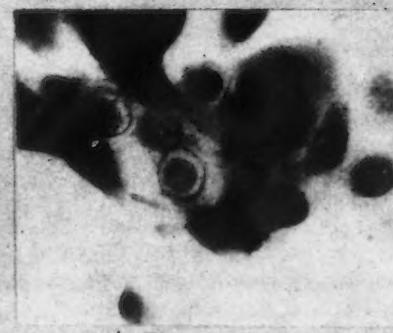


Fig. 4

**FIGURE 1.**

Ammon's horn of the brain of a rabbit infected with Virus B (Pool 56-1, pool A). Pyramidal cells with intranuclear inclusions are shown.  
Magnification x 175.

**FIGURE 2.**

Culture of normal monkey epithelium 7 days after preparation. Three cells in mitosis are shown.  
Magnification x 659

**FIGURE 3.**

Culture of monkey kidney epithelium 36 hours after infection with Virus B (36-2, Pool A). Disorganization of growth and several multinucleate giant cells are shown.  
Magnification x 160.

**FIGURE 4.**

Culture of monkey kidney epithelium 36 hours after infection with Virus B (36-2, Pool A). Several single and giant cells with intranuclear inclusion bodies.  
Magnification x 650.

*Attempts at Virus Recovery from Infected Monkeys*

The four monkeys inoculated with strain 36-A by the intracerebral and intradermal routes (Table IV) were employed in attempts to recover virus from the blood and saliva during the first seven days after inoculation. Samples of saliva and blood were taken from each monkey daily from the 2nd to the 7th day after inoculation and were used to inoculate roller tube cultures of monkey kidney. Virus B was not isolated from any specimen.

However, Virus B was isolated from the vesicle fluid of both monkeys inoculated intradermally and the titre determined in tissue culture was greater than  $10^{-3.0}$  on the 5th day.

#### *Cytologic Changes Induced in Tissue Culture of Monkey Kidney Epithelium by Virus B*

The characteristic cytologic changes induced by Virus B may be evident within 24 hours of infection of the culture if large doses are employed. Scattered foci of epithelial cell destruction occur and these rapidly coalesce to complete involvement of the growth. Individual cells enlarge and become globular and giant cell formation is soon evident. These giant cells may contain from 2 to 20 nuclei and often each nucleus is the site of a "Type A" inclusion body. These inclusions are initially basophilic and later develop eosinophilic properties. A stage is soon reached where comparatively few single cells are seen, and these are swollen and often distorted in shape. Subsequently, the cells fall into the nutrient medium. These changes are illustrated in Figures 2, 3 and 4. The striking picture of cell shrinkage seen in cultures infected with poliomyelitis viruses is not prominent in cultures infected with Virus B and the two types of "cytopathogenic effect" can be differentiated with ease. Virus B also produces a characteristic change in cultures of monkey testicular fibroblasts and marked globulation of the cells is the principal feature.

#### *Neutralization of Strains Isolated by Virus B Immune Serum*

All strains were neutralized to a titre of approximately  $10^{-2.0}$  by "Canfield" rhesus immune serum kindly sent to us by Dr. A. B. Sabin. These tests were carried out in tissue cultures, against 100 TCD<sub>50</sub> of each of the strains isolated.

Several immune sera to herpes simplex virus neutralized the strains to a titre of approximately  $10^{-1.0}$ .

#### *Formalin Inactivation*

A pool of Virus B which had a titre of  $10^{-5.25}$  was used. To 80 ml. of this fluid 1 ml. of a 1: 50 dilution of formalin in Medium No. 199 was added to give a concentration of 1: 4000. The fluid was kept at 37°C. and samples withdrawn over a period of 30 hours. Samples were dialyzed against Medium No. 199 at 4°C., after neutralization of the formalin by 35/16 of sodium bisulphite solution. The rate of inactivation is shown by the titres at successive time periods given in Table V.

#### DISCUSSION

The host range of the six strains isolated and the histopathology of experimental animals are essentially similar to those reported by Sabin (4, 5, 7) for the original Virus B strain isolated from a fatal human case. In general, our strains appeared to be somewhat less virulent for rabbits. As previously reported by Sabin and Wright (4), and by Gay and Holden (3), infection in monkeys may not be fatal. Interpretation of studies in these animals is complicated by the fact that a high percentage may have serum antibody to Virus B, pro-

TABLE V  
RATE OF INACTIVATION OF VIRUS B BY 1:4000  
FORMALIN SOLUTION

Hours after addition of formalin	50 percent neutralizing endpoint
0	$10^{-5.25}$
6	$10^{-2.50}$
10½	$10^{-1.05}$
22	10
30	$10^0$

bably as a result of natural infection (3, 6). Thus, Burnet, Lush and Jackson (21) reported that a group of eight rhesus monkeys obtained from a zoo all possessed neutralizing antibody.

The records of the monkeys used in the preparation of poliomyelitis virus pools which were later shown to contain Virus B indicate that the animals were apparently quite healthy at the time of operation. During the period in which these isolations were made, 650 pools of poliomyelitis virus were produced from the kidneys of approximately 5,000 monkeys, so that the incidence per pool is just under 1%. One can only presume that certain monkeys at the time of operation were undergoing a primary infection, and had a B viraemia, or that they had been infected some time previously with the virus lying latent in the kidney. Of interest in this connection is the demonstration by Cowdry and Scott (22) of intranuclear inclusion bodies in the kidneys of normal rhesus monkeys and in animals treated with irradiated ergosterol, although their inclusion bodies appear smaller, and the surrounding "halos" are larger than those we have observed in tissue culture infected with Virus B.

The cytologic changes induced in cultures of monkey kidney epithelium by the Virus B strains are striking and characteristic. The presence of multi-nucleate giant cells in which each nucleus is the site of an inclusion body is a constant finding. They appear very similar to those reported by Tzanck (23) and more recently by Blank *et al.* (24) in smears and sections of the skin lesions of herpes simplex, herpes zoster and varicella.

#### SUMMARY

1. Six strains of Virus B have been isolated from pools of poliomyelitis virus prepared from the fluids harvested from large tissue cultures of monkey kidney.
2. Five strains were obtained from pools of poliomyelitis virus which had been prepared in cultures employing tissue from rhesus animals, and one from cultures employing tissue from cynomolgus animals. All animals were apparently quite healthy at the time of operation.
3. The overall contamination rate with Virus B in pools of poliomyelitis virus was approximately 1% (6 of 650 pools).
4. The six strains all produced distinctive changes in the cells of tissue cul-

tures of monkey kidney epithelium, prominent features being very marked cell globulation, giant cell formation, and the presence of Type A intranuclear inclusions.

5. The susceptibility of rabbits, mice, guinea-pigs, hamsters and monkeys to these strains was investigated and the results were essentially similar to those reported for Virus B.

6. Attempts to isolate Virus B from the blood and saliva of experimentally infected monkeys failed, but virus was recovered from the vesicle fluid in animals inoculated intradermally.

7. Tests in tissue culture showed all strains to be neutralized by immune monkey serum to Virus B to approximately the same titre.

8. In a 1: 4000 solution of formalin at 37°C., the rate of inactivation of a strain of Virus B was such that no infectivity could be demonstrated after 22 hours. It is thus evident that Virus B is inactivated much more rapidly than is poliomyelitis virus.

Grateful acknowledgement is made to Miss S. Kawasaki for technical assistance.

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## The Hospital in the Public Health Plan

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MY interest in this subject is derived from the fact that until eleven months ago I was engaged in public health nursing. For seven years I worked for an official agency and for six years with a voluntary public health agency, the Victorian Order of Nurses. For a number of years I have felt that some thought might be given to the integration of hospital services and community health services. Since returning to hospital administration and institutional nursing, I have become more aware of the importance of this type of integration sort, although I must emphasize that I am speaking quite generally and have no specific institution in mind; perhaps I might say that I feel all hospitals ought to be taking steps to see that their services are more completely a part of the total health program for their communities. At this point, it might be well to make it clear that I am not, from any point of view, advocating State medicine.

Let me try to explain my general plan in a few words, and then review certain ideas which I think could be acted upon without delay. I cannot claim originality of thought because much has been written on the subject and projects similar to what I have in mind are already in operation in several places, including the United States of America.

Last October, at the forty-first annual meeting of the Canadian Public Health Association, Dr. Edward G. McGavran, Dean of the School of Public Health in the University of North Carolina, gave an excellent paper entitled "What is Public Health?" (1). In it he traced the intricacies and complex evolution of public health practice from the modest beginnings concerned with sanitation and communicable disease control, to the present-day concept of scientific treatment (mental, physical, social and economic) of the community as a whole, rather than of the individuals that make up a community. He concluded that "Public Health is the scientific diagnosis and treatment of the body politic."

I think Dr. McGavran might have laid more stress on the responsibilities of the hospital in making provision for good community health programs, because in essence his statements corroborate the idea expressed in every article or book on the subject to which I have had access, that better care of the ill, better supervision in health, and better prevention of all disabilities can be achieved through community planning and coordinated, or I would prefer to say "integrated", services. I know the word "integrated" has become

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something of a cliché, but no other expresses quite as well the idea of bringing together the composite parts of a whole.

The very first manifestation of concern for the health of the public was the provision of almshouses or the early hospices for care of the weary, often ill, traveller, or the sick in the community. In view of this, it should not seem radical to suggest that the hospital ought to be the centre of community health services today.

Keeping in mind Dr. McGavran's suggestion that we should be concerned with the health of the entire community rather than of the individuals within it, let us consider for a moment the actual physical or structural aspects of a community. Imagine for a moment what the view would be from a great height. Any of you who have travelled by 'plane should have no difficulty in visualizing the picture. The homes are row upon row. On various corners churches can be seen. Business buildings can be identified, too; some perhaps provide space for the offices of social agencies, doctors, dentists and visiting nursing organizations. Then there are civic buildings, in which doubtless are located welfare and health departments. There are also schools and colleges which meet educational needs, and recreation centres, both voluntary and commercial. Perhaps the most conspicuous is the hospital.

At first glance it would seem that provision has been made to meet all social, health, recreational, educational and economic needs, but on closer inspection we find each organization or institution administering its own service independently, with only minimum collaboration or co-operation with others. Most authorities agree that general hospitals can no longer limit the use of their facilities to patients within the institution. In writing about planning for hospital construction, Dr E. M. Bluestone, Director of Montefiore Hospital in New York, says that the hospital "must make these facilities available to patients outside its walls. It must help to prevent disease either on a co-operative or on an integrated basis and if it fails to prevent disease, it must devote its energies to the prevention of its spread, the prevention of chronicity, prevention of complications, sequelae and relapses and what may prove to be most important, the prevention of social dependence".(2).

It is impossible to think of health services in a community without realizing that although much has been done to eliminate many diseases, notably the acute communicable diseases, the morbidity incidence remains high and is likely to continue so. With increased longevity we must expect further increases in diseases which are associated particularly with age. The logical conclusion is that hospitals will be an increasingly important adjunct to community health programs. Undoubtedly time will effect notable changes in hospital structure and program to meet new needs. One example already in evidence is the need for organized programs for rehabilitation of patients to functional activity in the community. I think the most likely result will be the institution of facilities where such programs can be undertaken by properly prepared professional people. A complete rehabilitation program must include, as well as medical diagnosis and treatment, ancillary services such as psychological, physical and occupational therapy, vocational diagnosis, guidance, training and placement assistance.

On May 11th, Dr. Wallace Wilson, adviser in geriatrics to the Director in

General Treatment Services, Department of Veterans Affairs, spoke on this subject at the general annual meeting of the Victorian Order of Nurses. He had some worthwhile suggestions, which he has given us permission to quote:

"In every acute hospital of any size, there should be established a rehabilitation unit. The size of the unit will depend on the size of the hospital, but even in our larger hospitals a unit of 15-30 beds would suffice. Just as soon as the patient has passed the acute stage, and it was seen that he or she was passing into a long-term phase, that patient would be promptly transferred to the unit and there without loss of time, team-work rehabilitation would be undertaken . . . a certain percentage of cases, after a reasonably short stay, would be ready to go home; others would have to be sent on to where more prolonged treatment could be given, and that requires, in our larger centres, a Rehabilitation Hospital. . . . Even if and when we have our special units, there will always be the place for the program to be carried out or continued, in the home. It may be continued as a part of a hospital-home care plan for suitable patients."

The plan I have in mind would incorporate all of these things and other specialties which are equally essential, such as psychiatric and mental health services and care for the chronically ill. These, of course, are in addition to treatment and prevention of acute conditions. I believe provision should be made, within the hospital proper, or in an adjoining building, for offices which could house the visiting nursing organization, official agency personnel, attending practitioners in medicine and dentistry, and welfare and social agencies. Such an arrangement would guarantee, to the health department and private physicians alike, the availability at minimum cost of the optimum in diagnostic and therapeutic facilities. In most places at present there is considerable duplication of expensive equipment and the highly trained skilled personnel who operate it, such as those required in laboratories, radiological, cardiological and basal metabolism departments.

Hospital and public health programs have more things in common than those I have already mentioned. Two of the most outstanding are maternal and infant welfare and health education. What better place than the hospital to initiate instruction and guidance in good maternal and infant hygiene, with its many ramifications which include everything from physical and emotional health of the entire family to nutrition? This is particularly important for the primipara, but there is also much for the mother of larger families to learn. I think it matters not at all whether a start is made on the maternity ward, or at a prenatal discussion group conducted in conjunction with the out-patients' department, or perhaps a group organized in the community under the auspices of private and public health agencies. I would suggest that we have need of both schemes, and the important point would be to see that duplication of service is prevented by co-ordinated planning.

In respect to health education it has been stated that "no one appreciates information concerning the prevention of disease and maintenance of health more than does a sick person. This, then, is the main reason why health education should be especially effective in the hospital" (1). The most valuable plan for health education would be a continuing one, with specific interest for the patient and broad information for the general public. Pamphlets are

useful, although their effect is limited. Demonstrations and group discussions have more value, and all patients could participate as soon as they are ambulatory or allowed in wheel chairs. All such educational programs should be integrated with local, provincial and national health programs.

In speaking of education, I must mention the important contribution hospitals and public health agencies make, or should make, to the education of nurses and doctors. I would not presume to make suggestions regarding the educational plans or curricula used in medical schools across Canada, but I am bold enough to suggest that more should be included in the basic training for nurses, to enable them, on completion of their course, to assume responsibilities in all fields of nursing, including public health. This would necessitate considerable reorganization of the present courses, but it would be possible if central schools for nursing education were established. In Saskatchewan a start has been made with central schools located in Regina and Saskatoon, but provision has been made only for lectures in the preliminary period. I see no reason why lectures for the entire course could not be given at central schools, and the practical application of the theory be carried on in the parent hospitals. I shall not go into detail regarding the responsibilities of hospitals and central schools in correlating a plan of this nature, but I must point out that standardization and improvement in the quality of teaching would not only be possible, but would be secured at much less cost to the community than under the present system.

Although I may inadvertently have given the impression that my plan is designed only for the smaller community, with one hospital, it will work equally well in larger centres. The only difference in communities with large concentrations of people and many hospitals is that each hospital would share in the provision of housing for other agencies, doctors, etc., and by so doing would be able to participate in the integration of programs. If joint housing is impossible, equally good results may be obtained through joint planning and administrative committees.

A beginning has already been made in some provinces. For example, in Saskatchewan a master plan has been drawn up for developing hospital facilities in suitable locations to provide adequate hospital services for all residents of the Province. These are being designed to function as health centres for the district too. In Newfoundland, the Cottage Hospital system operated by the Provincial Government provides a similar service in Outports, and the public health nurses employed visit homes in the district, as well.

But these are government-sponsored plans, and although they are recommended methods of providing integrated public health and hospital services, they are not quite what I have in mind. A great many hospitals are in entirely different situations, and these independent institutions I believe could utilize the plan I have suggested. If any hospital requires a new building, then the starting point is the blue prints. Provision can be made for construction of a true community health centre, embodying all facilities for diagnosis, active treatment, follow-up and rehabilitation. If, on the other hand, a new building is not planned, existing hospitals can make a beginning with their out-patient departments, and by establishing Home Care Departments.

The Reddy Memorial Hospital, in Montreal, is the first and so far the only

hospital in Canada to establish a Home Care Department. Very briefly, a home care service permits suitable hospital patients to be looked after in their own homes. Various types of equipment—for example, hospital beds, enamel-ware, etc.—are loaned as long as required by the patient. A hospital interne visits the patients as necessary, also physiotherapists if their services are needed; nursing care is provided by purchasing it from the Victorian Order of Nurses. A Hospital Home Care scheme needs no new equipment or staff trained especially for the work. It is simply a new way of integrating facilities already available in many communities across Canada.

Moreover, under a plan of this sort it is possible to maintain more normal family relationships than when the patient is in hospital. In most cases, depending on the personalities involved and the home environment, the emotional trauma caused by illness of a family member cannot help but be aggravated by separation from the unit. This is particularly true of older people and children, and much can be gained by caring for the patient at home. At the Reddy Memorial Hospital, since the inauguration of our Home Care Department our bed capacity has increased at least 30%, and our turnover is more rapid because very few patients with long-term illnesses occupy beds required for acute cases. This has been a factor in reducing our average stay per patient to 7.79 days.

Out-patient departments can provide ample opportunity for preventive work and follow-up supervision through various clinics. I have already mentioned discussion groups for expectant mothers, and there are many others; for example, child health clinics (offering immunization, pre-school examinations and so on) mental hygiene, venereal disease and tuberculosis clinics.

We also have a very active out-patients' department, but we too have a long way to go before achieving a well-integrated community health service.

There is yet another method of integrating hospital and other health services, and that is to have the medical officer of health for the city or district function as the director of the hospital as well. A beginning under this plan has been made in St. Hyacinthe, where Dr. Marc Bergeron carries the dual responsibilities.

While I have mentioned nothing in respect to the financing of such a scheme, it has been suggested to me that a plan of this sort would lend itself admirably to the combined-appeal method of raising money. I sincerely believe the improvement in morale that this plan would bring to the community as a whole is incalculable.

In Canada we are rapidly approaching the place where, in an attempt to co-ordinate our individual efforts at providing health and welfare services, we must make a choice between two divergent systems. We must choose either a completely socialized welfare state or intelligent co-operation between responsible, independent institutions and agencies. There is no third course. We cannot go back to the conditions of a few years ago; we must go forward.

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## Changes in the Population Pattern as Revealed by the 1951 Census

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**I**N discussing changes in the population pattern of Canada, it is not my intention to burden you with a lot of statistics, but it is difficult to speak of the population pattern revealed by the 1951 census without using some statistics. It is not my intention to go into great detail, but simply to point out areas where special study would be of benefit to the public health worker.

A comparative study of the results of the 1951 census and those of preceding censuses, in particular the 1941 census, reveals a number of very important changes in the distribution of the population and also in many of its characteristics. I propose simply to mention a few of them which I consider to be of special interest to persons working in the field of public health.

During the decennial period 1941-51 the population of Canada increased from 11,506,655 to 14,009,429, or 21.8%. If we remove the population of Newfoundland from the 1951 figure, we have an increase of 18.6%. This is the largest numerical increase on record, but the proportional increase is lower than the 33% increase of the 1851-61 decade, the 34% increase of the 1901-11 period, and the 22% increase of the 1921-31 decade. During the decade 1931-41 the proportional increase was down to about 7.1%, the lowest on record.

The natural increase during the 10-year period was 1,972,000, and there was an immigration of 547,882 during the same period, showing an apparent emigration of 378,900. The 1951 census shows 424,300 persons who immigrated to Canada between 1941 and 1951. By deduction, then, of the apparent emigration to other countries, roughly one-third are persons who came to Canada during the decade and the remaining two-thirds are either Canadian-born or immigrants of a previous period.

The manner in which this increase is distributed within the various parts of the country is of considerable interest. Of the nine provinces (not including Newfoundland) one, Saskatchewan, shows a decrease of 7%, which means that she lost through migration all of her natural increase of 135,000 plus another 64,000 persons. Prince Edward Island showed an increase of 3.6%, but lost through migration 79% of her natural increase of 15,800. Manitoba showed an increase of 6.4% but showed a loss through migration of 57% of her natural increase. Nova Scotia and New Brunswick had increases of 11.2%.

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and 12.7%, with loss through migration of 38% and 42% respectively of their natural increase. Alberta had an increase of 18%, and lost through migration about 5% of her natural increase. Quebec with an increase of 21.7% lost through migration nearly 2% of her natural increase. On the other hand, Ontario and British Columbia showed increases of 21.4% and 42.5% respectively, and migration accounted for 38% of the total increase in Ontario and 66% of the total increase in British Columbia.

To summarize, five of the nine provinces have contributed to other provinces an amount equal to an important fraction of their natural increase; two have just about, but not quite, retained their natural increase; and two have grown at the expense of all the others.

The interprovincial movement just described is quite important but the intraprovincial movement during the decade was just as important if not more so. Of the 230 counties or census divisions into which the country is divided for census purposes (exclusive of Newfoundland), 41 or 18% show actual decreases in population, 28 or 12% show increases of less than 5%, and 26 or 11% show increases of between 5% and 10%. In other words, 40% of the counties or census divisions have lost either some population or all or a good part of their natural increase. Furthermore, in spite of whatever their population increase might be, only 23 counties or census divisions (10% of the total) do not have municipalities or sections which do not show decreases.

As a further indication of the patchiness of the population growth in the decade, in Nova Scotia, three counties out of 18 show over 82% of the increase of the province. In New Brunswick five out of 15 counties have over 72% of the increase, in Quebec 15 out of the 66 counties have over 73% of the increase, and in Ontario 12 out of the 54 have over 71% of the increase. In Manitoba, three divisions out of the 16 have a population increase which is greater than that of the province as a whole. In Saskatchewan, where there has been quite a large decrease in population (7.2%), two divisions show quite a sizeable increase. In Alberta three divisions have 96% of the total increase and in British Columbia three out of the 10 divisions have over 86% of the total increase.

Thus the growth of population has been concentrated in a relatively small area and the problems created by the population behaviour are not all of one type. In a very considerable area of the country the problems are those attendant on a decreasing population and in the remainder they are those caused by a very large and rapid growth. With very few exceptions the growth has been in and around industrial areas.

#### *Rural and Urban Distribution*

From a public health standpoint, the division between rural and urban is a matter of considerable importance. The health problems of urban and quasi-urban agglomerations and those of scattered rural areas are undoubtedly very different.

Between 1941 and 1951 it was found advisable to change the definition of what constituted rural and urban populations, so that comparisons of the 1951 census returns with previous censuses are somewhat complicated. Before the

1951 census, all the population living within the boundaries of incorporated cities, towns and villages, regardless of size, was classified as urban. The definition did not include agglomerations, no matter what their size, if they did not fulfil the requirement of incorporation. This created a certain number of anomalies; for example, the village of Metinota, Sask., with a population of seven, was counted as urban, and the township of York, with a population of over 100,000 and which is in reality the overflow of the city of Toronto, as rural.

For the 1951 census, the definition was changed. The urban population now includes the population of incorporated cities, towns and villages of 1,000,000 population or more, the population of unincorporated agglomerations of 1,000 population or more, and the rural parts of the metropolitan areas of large cities. For the whole of Canada, the urban population was increased by 8.6 per cent through the change in definition. This change is broken down as follows: 851,130 were added through the rural parts of metropolitan areas and 265,584 by unincorporated places of 1,000 population or more; on the other hand, 429,683 were removed through the removal of incorporated towns and villages of less than 1,000 population. Therefore, out of an increase in urban population of roughly 2,000,000 during the decade, 687,000 or one-third is due to the change in definition.

Certain localities are affected more than others by the change in definition. For example, the urban population of York county, Ontario, is 772,000 according to the old definition and becomes 1,135,000 by the new one, showing a 46 per cent increase due to the change. Similarly, division 4 of British Columbia, in which Vancouver is situated, has a population of 407,000 by the old definition and 545,000 by the new one.

The new definition has caused a decrease in urban population in the provinces of Prince Edward Island, Quebec, Saskatchewan, and Alberta (where there is a large number of incorporated villages of less than 1,000 population), while all the other provinces gained by it, the most important gains being 18% in Ontario and 12% in British Columbia. Because of this change, it will be difficult to make a significant comparison until we have had the opportunity of recompiling the past censuses on the basis of the new definition.

Using the old definition, it is of interest to note the rate at which urbanization has been taking place in Canada. In 1871, 19.6% of the population of Canada was living in urban areas; by 1901 the percentage had risen to 37.5; by 1921, it was 49.5; by 1931, 53.7; by 1941, 54.3, and by 1951, 57.4. On the other hand, if we apply the 1951 definition to the 1941 census we find that in 1941, 56.5% of the population was urban as compared to 62.1% in 1951. This brings out the fact that in the last decade the suburban parts of the large cities have grown at a much greater rate than the cities proper. If we take the metropolitan areas of the cities of 100,000 and over, we find that during the decade the cities proper increased 11.5 per cent while the suburban parts increased 67%. If we take the Metropolitan area of Toronto as an example, we find that the city proper has increased less than 2 per cent while the suburban parts increased over 82%.

Now, taking the urban population by size groups—namely, 100,000 and

over, 30,000 to 100,000, 5,000 to 30,000, and 1,000 to 5,000—we find that the group which shows the greatest percentage increase is the group of cities of 5,000 to 30,000, which increased 41% during the decade, while the others increased around 20%. For the cities of 100,000 and over, if we add the suburban parts, the increase becomes 28%. The significant fact about this is that during the decade prior to 1941 the larger cities increased at a greater rate than the smaller ones, while in the decade 1941–1951, the smaller cities increased the fastest. This, I suppose, is explained by a wider distribution of industries.

#### *Rural Population*

Using the old definition, the rural population increased over 10% during the decade, but using the new definition the increase was only 7.7%. Of the 230 counties or census divisions (exclusive of Newfoundland) only 46 or 20% show an increase which is equal to or greater than the natural increase and these, almost without exception, are located close to fast-growing urban centres. The only conclusion that can be drawn from this is that even the rural growth is an extension of the urban growth of the period.

To sum up this section on population growth, one or two main facts can be seen: The growth of population has been almost exclusively urban and the growth was not limited to a few centres but to a very great proportion of them.

#### *Sex Ratio*

All through the years, there has been in the total population of Canada a predominance of males. In 1881, the ratio was 102 males to 100 females. It rose to 113 in 1911 and gradually declined again to 102 in 1951. By provinces, the ratio ranges from 99 in Quebec to 110 in Alberta. The sex ratio in Canada has always been influenced by immigration and in the provinces by immigration and interprovincial migration. The ratio of males to females is higher in rural areas than in urban, and in practically every county the number of males is higher than that of females. On the other hand, only one-fifth of the cities and towns of 10,000 population or more have more males than females, and in some of the cities the ratio is as low as 81 males to 100 females.

The ratio varies appreciably by ages. Under 20, the number of males predominates in all provinces, varying from 104 males to 100 females in the group 0–4 years of age down to about 101 in the group 15 to 19. The groups from 20 to 34 in the country as a whole have a surplus of females, the ratio being around 97 males for 100 females. By provinces, there is a considerable amount of variation. This phenomenon appears for the first time in Canada and is due to war casualties in these age groups and still more to the immigration of war brides. By provinces, the greater variation is also due to internal migration. In the age groups above 35 and up to 75, the males predominate. Over 75 the number of females is considerably greater.

The Census shows that the immigrants who came to Canada in the last 10 years and were here at the time of the census were more evenly distributed

as to sex even though there was a slight predominance of females. This tends to balance the sex ratio of the population, which had been disturbed by previous immigration.

#### *Age Distribution*

Undoubtedly, the most important characteristic of the population from a public health standpoint is age, because the health problems of youth, of the working population and of old age vary greatly. There has been a considerable change in the age structure of the population over the years. It is not possible to mention all these changes but I shall touch upon a few which, in my opinion, are very significant.

The percentage of young children in the population has changed considerably over the years. In 1881, the children 0-4 years of age were 13.8% of the total population. This proportion declined to 9.1% in 1941, to climb again to 12.3% in 1951, a greater percentage than that of any census since 1891.

Children 0-9 years of age, constituted over 26% of the total population in 1881, 18% in 1941, and 22% in 1951. It is remarkable that the number of children under 10 years of age, exclusive of Newfoundland, increased by over 40 per cent during the decade 1941-51. Between 1931 and 1941, there had been a decrease of over 100,000.

The number of young people of 10-14 and of 15-19 years of age show a decrease between 1941 and 1951, the result of the low birth rate of the Thirties. This also indicates that for the next few years the number of young persons entering the labour market will be smaller. The percentage of the 10-19 year group in the total population decreased from 23% in 1881 to 15.6% in 1951.

On the other hand, the population of working age, 20 to 59 years of age, has shown a marked increase in proportion to the total population since 1881. At the earlier census only 43.8% of the total population was in this age group while in 1951 the percentage was 50.9. The distribution within this working age group has changed quite considerably during the same period. In 1881, 23% of the population was between 35 and 59 years of age, whereas in 1951 the proportion is over 27%. In other words, the 1951 working population is much more heavily weighted with people in the higher age groups.

In the older age groups—that is, the population of 60 years of age and over—the percentage of the total population has risen from 6.4 in 1881 to 11.4 in 1951. The previous statement about the older working population shows that this percentage will continue to increase and will probably reach 12% in 20 years. In absolute numbers, the number of persons 60 years of age and over went from 275,988 in 1881 to 1,592,425 in 1951 and will reach about 2,200,000 in 1971. This represents an increase of 477% between 1881 and 1951, when the total population increased only 154%. In other words, we are faced with a considerably larger number of older people and we must be prepared to face the problems which will be created by this.

With regard to the ageing of the population, I would like to quote from a paper by Frank W. Notestein of the Office of Population Research of Princeton University to the American Philosophical Society. He states: "Viewed as a

whole, the problem of ageing is no problem at all. It is only the pessimistic way of looking at a great triumph of civilization. The population of the United States, and of the Western World in general, has grown older because it has learned to be efficient in the renewal of its life. Today, one thousand births yield about twice as large a fund of life as they produced in Colonial times, and as they produce to-day among more than one-half of the world's population. We are a relatively old population partly because so many of us have been successful in achieving our goal of individual survival. So, with a perversity that is strictly human, we insist on considering the aggregate result of our individual successes as a problem."

Then he goes on: "To suggest that the ageing of the population is to be viewed as an asset is, of course, not at all to suggest that there are no problems of economic and social adaptation to be faced. Naturally, there are such problems, for the changes in the composition of the population have been rapid and have brought with them changes in the labour force and in the burden of dependency."

Province-wise, the age distribution of the population shows considerable and highly significant variation. As compared to 22% for Canada as a whole, the percentage of the population 0-9 years of age to the total varies from 29% in Newfoundland down to 26 in New Brunswick and 25 in Quebec and progressively downwards in the other provinces until it reaches lows of 20 in Ontario and 19 in British Columbia. The population 10-19 years of age varies from 18.4% in Newfoundland to 12.8% in British Columbia.

On the other hand, the working population 20-59 years of age is 53.5% of the total in Ontario, 53% in British Columbia, and down to 43.3% in Newfoundland. The older ages, 60 years and over, are lowest in Quebec with 8.6% and highest in British Columbia with 15.6%.

Since the burden of old-age pensions is borne to a considerable extent by the persons of working age, it is of interest to consider the ratio of persons 20-70 years of age to those 70 and over in each province. For each person over 70 there are in Newfoundland 12 between 20 and 70, 8 in Prince Edward Island, 10 in Nova Scotia, 11 in New Brunswick, 16 in Quebec, 11 in Ontario, 12 in Manitoba and Saskatchewan, 14 in Alberta and 10 in British Columbia.

The proportion of the male population 65 years of age and over in the labour force is decreasing rapidly. It fell from 55.7% in 1931 to 47.2% in 1941 and to 37.7% in 1951.

#### *Rural and Urban Age Distribution*

A study of the 1951 age distribution shows differences as between rural and urban, but these seem to be less marked than in preceding censuses. If we take the youngest ages, 0-4 years, we find that they form 12.3% of the total population. They are, however, 13.6% of the rural population, which shows that birth rates are still higher in the rural parts than in the urban. Now, if we divide the rural population into farm and non-farm we find a rather interesting fact. The groups 0-4 years are only 12.9% of the farm population, while in the non-farm they are 14.4%. With 10% less population, the rural non-farm population has a few thousand more 0-4 years of age than

the farm population. The age distribution of the farm population compared with the non-farm is responsible for this fact. Migration from farms has taken away a large number of younger people, leaving the farm population considerably older than the other.

The population 0-9 years of age is 22.4% of the total population of Canada but 25.4% of the rural and 20.3% of the urban. Again, the rural non-farm has a slightly higher proportion than the farm population.

The population 10-19 years of age is 15.6% of the total, 18.3% of the rural, 20.2% of the farm, 16.2% of the rural non-farm and only 13.9% of the urban population. It will be noted that in this group the situation is reversed and the farm population has the larger proportion. Comparison of the two groups 0-9 and 10-19 shows that it is only in the last ten years that the birth rate of the rural non-farm population has got ahead of the farm. This points to the fact that the large increase in birth rate has been in the population which does not reside on farms.

Now, if we consider the working population, 20-59 years of age, we find that for the country as a whole it constitutes 50% of the population. In the rural population it is 45.5% and in the urban 54.5%. The rural non-farm population is higher than the farm population by about 2% at 46.6%.

If we divide the working population into two groups, the younger working population (i.e., 20 to 44 years of age) and the older (45 to 59), we find the proportion of younger people 4% lower in the farm population than in the non-farm. If one wished to speculate, one could estimate how long it would be before the farms had to draw on the rural non-farm or on the urban population for their essential labour force.

The statistics show that the population of Canada is taking the pattern of an older population in spite of the recent increased birth rate, but the farm population is considerably older than the remainder.

In the group 60 years and over, the proportion to the total population is less than 2% greater in the urban than in the rural population.

If we consider the urban population alone, we find some important differences in the age distribution according to the size of the centres. As the urban groups increase in size, the percentage of the total population in the lower age groups decreases. In the group 0-4 years the percentage decreases from 13.2% in the urban centres of less than 10,000 population to 9.7% in the cities of 100,000 and over. It is of interest to note that the percentage of 0-4's to the total population in the urban centres of less than 10,000 population is greater than in the farm population, 13.2 and 12.9. The group 0-9 years follows the same pattern, going down from 23.8% to 17.1% as the size of the group increases. The same thing is true of the group 10 to 19 years of age, the percentage of which decreases from 15.6 to 12.6.

The working population follows the opposite trend. The percentage of the total population in the group 20-59 years of age decreases from 57.5 in the cities of 100,000 population and over to 49.7 in the centres of 10,000 population or less.

Time does not permit us to look into the variations in age distribution by provinces. Because of their importance, anyone interested in public health would be well advised to study them in detail for his own province.

From a study of this type, the only thing that can be done is to point out to the obvious conclusions. The most apparent ones may be summed up as follows:

1. In the last decade there has been an almost phenomenal increase in the population of the lower age groups. The group 0-9 years of age have increased by 915,000 or about 44% in the decade. This is compared to an actual decrease of over 100,000 in the decade 1931-1941.
2. The population 10 to 19 years shows a decrease between 1941 and 1951, indicating that for the next decade the number entering the labour force will proportionately be smaller.
3. In the older age groups, the population 65 years of age and over increased 38.4% during the decade or at approximately twice the rate of increase of the whole population. Furthermore, the percentage of this population in the labour force has decreased considerably.
4. The rural population increased only very slightly (3.4%) during the decade and because of the age selectivity of migration, a considerable disturbance was created in the age structure.
5. The farm population is considerably older than the remaining rural population and for the first time in any decade has proportionately fewer children under 5 than even the urban centres of 10,000 population or less.
6. Within the urban population the distinction which existed between larger and smaller centres continues but seems to have become less marked. The larger centres have a smaller proportion of the younger age groups and a greater proportion of working ages. As far as older age groups are concerned, the variation is not great.

#### *Marital Status*

Another characteristic of the population which is of importance to the public health worker is the marital status of the population because of its influence on future population growth. Between 1941 and 1951 the percentage of the population 15 years of age and over which was married increased from 57% to 64% of the total. If we remove the 15 to 19 group, which is largely single, the percentages become 64 and 70. There is no significant difference in the percentage married whether it be on farms, in rural non-farm, in large or small urban centres. Wherever they happened to be located, people have married in greater proportion during the last decade. The reasons for it are not particularly hard to assess.

Males 15 to 44 years of age, married, increased from 44.6% of the total in 1941 to 55.5% in 1951, and females from 53.9% to 64.3% during the same period.

In the whole of Canada, the number of single persons 15 years of age and over shows a decrease during the decade. The decrease was entirely in the rural parts; the urban centres show a slight increase. The number of widowed persons showed an increase consistent with the ageing of the population.

#### *Immigrants*

The part played by immigration in the population increase of the last decade is of greater importance than the absolute figures would indicate and

is of importance to the public health workers because the newcomers may have health problems which are different from those of the native born population.

The 1951 census shows 424,293 residents who immigrated to Canada between 1941 and 1951. These recent arrivals constituted 17% of Canada's population increase in the decade. More than half of these were located in Ontario, with the other half distributed among the other provinces. About 75% resided in urban centres and about 40% in centres of 100,000 population or more. The remaining one-quarter were fairly evenly distributed between farm and rural non-farm areas.

The age distribution of the immigrants varies considerably from that of the total population. Nearly 70% are in the working ages and nearly 60% are under 45 years of age. This heavy percentage in the early working ages counterbalances to a certain extent the proportionally small numbers of Canadian-born entering the labour force because of the very low birth rate of the Thirties.

#### *Labour Force*

The labour force increased in size by about 23% during the decade, but the outstanding fact is that the female labour force increased 37%.

It is difficult, here again, to make detailed comparisons with past censuses because of a change in concept between the two censuses and also because of the change in content of some of the items in the classification. There are, however, certain obvious facts which can be pointed out and which are not without significance. The agricultural labour force decreased by close to one-third (31%) and fishing and trapping by nearly 50% (49). Manufacturing and mechanical occupations increased by 37%, commerce and finance occupations by 40%, occupations in transportation by 58% and clerical occupations by 76%.

There are many other important changes; for example, in the composition of the Canadian family and in housing, etc.

The purpose of this paper was not to analyze in detail all the changes which have taken place in the decade in the distribution and in the composition of the Canadian population, but rather to mention a few as examples and to emphasize the fact that they have been greater than possibly in any other decade and to stress the importance to Canadian public health workers of studying them carefully.

## *Canadian Journal of Public Health*

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### DR. C.-E. A. WINSLOW RETIRES AS EDITOR

**A**NNOUNCEMENT of the retirement of Dr. Charles-Eduard Amory Winslow from the editorship of the Journal of the American Public Health Association has been received everywhere with the deepest regret. One of the great international leaders in public health, he is known personally to generations of students who have had the privilege of his instruction and to public health workers throughout the world who have come to know him through his writings. Only the dictates of health were sufficient cause for his withdrawal from the office which he has discharged with such distinction both to himself and to the journal which he has edited during the past ten years.

To the many expressions of appreciation which have been presented to him, his host of friends in Canada add their words of thanks. Public health personnel found Dr. Winslow's editorials always informative, scientifically and historically correct, and seasoned with sound judgment. We in Canada are fully aware that he never missed an opportunity, in commenting on public health problems, to show his interest in Canadian undertakings.

In another capacity, as accrediting officer for the American Public Health Association's Committee on Professional Education, Dr. Winslow contributed much to the establishing of effective standards for institutions providing postgraduate courses in public health. Initiating the program of accreditation of schools of hygiene, Dr. Winslow interpreted to the schools the requirements of the Committee so satisfactorily that accreditation was established and functioned without dissension or compromise. Dr. Winslow's visits to Canada as accrediting officer were occasion of special privilege, and his discussions with staff members were always helpful and encouraging.

The Canadian Public Health Association extends to Dr. and Mrs. Winslow very best wishes for their health and happiness.

## FREQUENCY OF AUTOPSY AMONG DEATHS IN ONTARIO, 1953

A. H. SELLERS, M.D., D.P.H.

*Director, Division of Medical Statistics  
Department of Health for Ontario*

and

INA M. JUDSON

*Statistician*

*Office of the Registrar-General for Ontario*

FROM time to time questions are raised concerning the relative frequency of autopsy among deaths in Ontario and the reliability without autopsy of the official statistics on causes of death. No official data on the subject have been published to date.

Since the medical certificate of death contains a specific question "Was there an autopsy (yes or no)?" and the mechanically punched mortality cards for the Province contain the coded replies to this question, arrangements were made to prepare for 1953 a tabulation of the deaths by cause, according to the International Statistical Classification (Intermediate List of 150 causes), indicating for each cause the number of deaths in which an autopsy was reported by the certifying physician. The general findings of this tabulation are set out in Table I for seventeen broad cause-groups.

Of the 45,194 deaths (tentative figure) an autopsy was reported to have been done in 6,664 or 14.7 per cent. The autopsy rate was highest for deliveries and complications of pregnancy, childbirth and puerperium (52.2 per cent) and the lowest for deaths assigned to senility and ill-defined conditions (3.4 per cent). In between these two extreme figures the proportion of deaths with autopsy varied widely, being rather lower than

expected for neoplasms (17.9 per cent) but much higher for accidents, poisonings and violence (31.4 per cent). It is noteworthy that the autopsy rate for deaths assigned to congenital malformations is fairly high (37.2 per cent).

In view of the particular interest in cancer mortality, similar data for malignant neoplasms of various sites are set out in Table II.

An autopsy was reported to have been done in 17.6 per cent of all deaths attributed to malignant neoplasms (all sites), including leukaemia and Hodgkin's disease. Variation in the autopsy rate for various sites is noteworthy—from a low of 7.2 per cent for malignant neoplasms of breast, as might be expected, to a high of 26.7 per cent for malignant neoplasms of trachea, and bronchus and lung (not specified as secondary).

These data are published with a view to stimulating the fuller utilization of the information recorded on the official medical certificate of death by certifying medical practitioners; they are useful also in considering the validity of certain recorded underlying causes of death. Physicians both in clinical practice and in medical teaching, as well as public health statisticians, should find the figures of more than passing interest.

TABLE I  
AUTOPSIES BY CAUSE OF DEATH\*  
RESIDENT DEATHS IN ONTARIO, 1953

International List Numbers	CAUSE OF DEATH	Total Deaths	Autopsy Done			
			Yes		No	Not Stated
			Number	Per Cent		
001-138	Infective and parasitic diseases	702	210	29.9	443	49
140-239	Neoplasms	6,899	1,238	17.9	5,315	346
240-289	Allergic, endocrine, metabolic & nutritional diseases	649	81	12.5	528	40
290-299	Diseases of blood and blood-forming organs	450	74	16.4	351	25
300-326	Mental, psychoneurotic, & personality disorders	170	28	16.5	132	10
330-398	Diseases of nervous system & sense organs	6,575	489	7.4	5,785	301
400-468	Diseases of circulatory system	18,260	1,407	7.7	15,798	1,055
470-527	Diseases of respiratory system	2,310	521	22.6	1,658	131
530-587	Diseases of digestive system	1,485	535	36.0	866	84
590-637	Diseases of genito-urinary system	961	188	19.6	725	48
640-689	Deliveries & complications of pregnancy, childbirth & puerperium	69	36	52.2	31	2
690-716	Diseases of skin & cellular tissue.	13	5	38.5	6	2
720-749	Diseases of bones & organs of movement	119	26	21.8	88	5
750-759	Congenital malformations	799	297	37.2	435	67
760-776	Certain diseases of early infancy	2,031	451	22.2	1,355	225
780-795	Symptoms, senility & ill-defined conditions	297	10	3.4	250	37
E800-999	Accidents, poisonings & violence	3,405	1,068	31.4	2,135	202
TOTAL		45,194	6,664	14.7	35,901	2,629

\*Tentative only.

TABLE II  
AUTOPSISES BY SITE OF CANCER\*  
RESIDENT DEATHS ATTRIBUTED TO NEOPLASMS, ONTARIO 1953

International List Numbers	CAUSE OF DEATH	Total Deaths	Autopsy Done		
			Yes		Not Stated
			Number	Per Cent	
	Malignant Neoplasms				
140-148	Buccal cavity and pharynx	145	15	10.3	124
150	Oesophagus	128	30	23.4	88
151	Stomach	900	128	14.2	726
152,153	Intestine, except rectum	866	123	14.2	704
154	Rectum	366	58	15.8	282
161	Larynx	36	6	16.7	28
162,163	Trachea, bronchus & lung not specified as secondary	636	170	26.7	427
170	Breast	671	48	7.2	598
171	Cervix uteri	233	22	9.4	201
172-174	Other and unspecified parts of uterus	128	11	8.6	110
177	Prostate	371	52	14.0	305
190,191	Skin	95	12	12.6	74
196,197	Bone and connective tissue	85	8	9.4	74
Residual	Other and unspecified sites	1,573	356	22.6	1,143
204	Leukaemia and aleukaemia	284	85	29.9	186
200-203,205	Other neoplasms of lymphatic & haematopoietic tissues	265	71	26.8	180
140-205	Total Malignant Neoplasms	6,782	1,195	17.6	5,250
210-239	Neoplasms, Benign or Unspecified	117	43	36.8	65
140-239	Total Neoplasms	6,899	1,238	17.9	5,315
					346

\*Tentative figures.

## NEWS

### 82nd Annual Meeting, American Public Health Association

MORE THAN 5,000 public health workers from all parts of the United States and Canada were meeting in Buffalo on October 11th to 15th for the 82nd annual meeting of the American Public Health Association. The thirteen sections of the Association held 75 sessions with more than 400 speakers. The meeting was also the occasion for the assembling of 38 related public health bodies.

Two symposia on surbanisation were presented; one dealing with shifts in population and economic activity, and one relating these changes to health activities, services and personnel as seen by public health workers, sociologists and public administrators.

International health problems occupied a major place in the program. Of special interest were the sessions arranged by the National Citizens Committee on behalf of the World Health Organisation. Dr. M. G. Candau, Director General of the World Health Organization, and Madame Rajkumari Amrit Kaur, India's Minister of Health, presented the challenge of international health. Illuminating reports were given on public health projects in Yugoslavia, Japan, Iran, Indo-China, Brazil, Thailand and Indonesia.

In his presidential address, Dr. Hugh R. Leavell, speaking on teamwork in the service of health, emphasized that the people must be part of our health team if our work is to be effective. He said: "I believe that in the future it will be even more logical than in the past for the physician to serve as a team leader, for health work will doubtless concentrate more and more on the individual in his environment rather than on the environment itself, at least in the more industrially developed countries." He pointed out the remarkable opportunities for experience in effective teamwork in the international health field, and said: "When a health worker from our country returns home after a successful foreign assignment, he will be a more useful person than before in his own environment. He will see differences at home to which he was blind before, and his tolerance for differences will be increased."

The Sedgwick Memorial Medal for distinguished service in public health was presented to Dr. Wilson G. Smillie, Professor of Preventive Medicine and Public Health, Cornell University Medical College.

The Lasker awards were conferred at the

two general sessions. Dr. Leona Baumgartner, health commissioner, New York City, the first woman to attain this position, was given this award for "distinguished achievements in public health administration, strengthening personal and community health, our greatest resource". Other Lasker awards were presented to Dr. Edwin B. Astwood, Dr. John F. Enders; a joint award to Dr. Alfred Blalock, Dr. Helen B. Taussig, and Dr. Robert E. Gross; and a group award to the Streptococcal Disease Laboratory, Armed Forces Epidemiological Board, Francis E. Warren Air Force Base, Cheyenne, Wyoming.

The Elizabeth Severance Prentiss National Award in Health Education was presented to Ira Vaughan Hiscock, Sc.D., Chairman of Public Health at Yale University.

Canadian representation at this meeting was exceptionally large. Papers were presented by Dr. F. W. Jackson, Dr. L. B. Pett, Dr. L. E. Elkerton, Dr. S. J. Koehler, Dr. G. H. Hatcher, Dr. J. Hastings, Dr. I. Smith, Mr. Morris Katz and Miss Anne Grant. Dr. Herman E. Hilleboe, Commissioner of the State Department of Health, Albany, N.Y., was elected president and Dr. Ira V. Hiscock, Professor of Public Health, Yale University, is president-elect.

It was announced that the 1955 meeting would be held in Kansas City.

*Margaret Cahoon, B.A., B.Ed., Reg.N.*

### Saskatchewan

A DISTINGUISHED English physician who came to Canada in 1948 has joined the Saskatchewan Department of Public Health. Appointment of Dr. Adrian Charles Kanaar as director of physical medicine in the Division of Physical Restoration has been announced by Dr. F. B. Roth, deputy minister.

Born in London in 1911, Dr. Kanaar attended Dulwich College, London, and graduated in medicine from St. Bartholomew's Hospital in 1934. He took post-graduate studies in surgery at Edinburgh and in internal medicine at London.

Following graduation from medical college, Dr. Kanaar was clinical assistant in the children's and orthopaedic departments at St. Bartholomew's; casualty house physician, St. Bartholomew's; house surgeon, Royal Infirmary, Sunderland; house surgeon to the orthopaedic department and to Sir Harold Gillies at St. Bartholomew's; senior casualty officer and house surgeon to the orthopaedic

surgeon and to the two assistant surgeons at Leicester Royal Infirmary; house surgeon at Leicester Royal Infirmary.

From May 1938 until the outbreak of war in 1939, Dr. Kanaar devoted his time to research studies on diseases of the sympathetic nervous system and at the same time was assistant medical officer at St. Peter's Hospital, Whitechapel. From 1939 to 1945 he served with the R.A.M.C. on blood transfusion teams in France, and later as surgeon at military hospitals and with 21st Army Group in Northwest Europe at casualty clearing stations and general hospitals.

After the war, Dr. Kanaar served for eight months as assistant surgeon and senior resident at the Ingham Infirmary, South Shields, Durham, England, in charge of physiotherapy.

From January 1947 to September 1948 he was assistant surgeon at Birmingham Accident Hospital, Birmingham, where he was one of eight on the senior surgical staff which dealt with accidents of all types. He assisted in supervision of rehabilitation shop at the Austin Motor Factory, receiving an award for research. He helped in teaching students, and worked closely with the social workers in placing convalescent patients in suitable jobs. While at Birmingham, Dr. Kanaar was awarded a Hunterian Professorship at the Royal College of Surgeons of England for work done there and in the Army.

After coming to Canada in 1948 Dr. Kanaar was consultant to the Workmen's Compensation Board of Ontario, at Toronto, until 1949. From 1950 to the present time Dr. Kanaar has been in private practice at Hamilton, Ontario, specializing in orthopaedic surgery. He was a member of the active staff of the Hamilton General Hospital where he also prescribed and supervised physiotherapy.

His degrees are: M.R.C.S., L.R.C.P. 1934; M.B., B.S. (London) 1936; F.R.C.S. (Edinburgh) 1937; M.R.C.P. (England) 1939; M.D. (London) 1939; L.M.C. (Canada) 1948; F.R.C.S. (Canada) Ad Eundem 1949; specialist certificate in general surgery (Canada), 1949; specialist certificate in orthopaedic surgery (Canada) 1950.

THE FIRST NUTRITION INSTITUTE for professional personnel offered by the Saskatchewan Department of Public Health was held in Regina at the end of November. This one-day institute was organized by Miss Eleanor Monan, director of nutrition. The principal speaker at the morning session was Dr. Jean Mayer, international authority on nutrition, whose topic was "Nutrition and Degenerative Diseases." Dr. Mayer is assistant professor of nutrition at the Harvard School of Public

Health and consultant to the Food and Agriculture Organization of the United Nations. Miss Margaret Wilkie, nutrition consultant to the Toronto Department of Public Welfare, and Dr. Mayer were leaders for the afternoon discussion. This session was mainly concerned with the application of nutrition principles to the practical problems met by the nutrition field worker. Participants included representatives from the University of Saskatchewan, hospitals, health agencies, and various branches of the Provincial Government service.

DR. A. HOFFER, director of psychiatric research for Saskatchewan, spent three months in Europe in the spring of 1954 making a study of the research being done on schizophrenia. This project, sponsored by the Rockefeller Foundation, enabled him to visit hospitals doing biological research into mental disease in the British Isles, France, Switzerland, Italy, Germany, Denmark, and The Netherlands. His time was spent chiefly with psychiatrists, biochemists, physiologists, and pharmacologists.

HAROLD LOBB, B.A., M.Ed., formerly executive director of the Saskatchewan division of the Canadian Mental Health Association, has been appointed to the staff of the Regina Rural Health Region as teacher-psychologist. Mr. Lobb was also formerly assistant director of health education.

#### Manitoba

THE CITY COUNCIL of Brandon in December unanimously passed a motion to undertake the fluoridation of the water supply. Brandon is the third largest city in the province, with a population of over 21,000, and is the first district in Manitoba to accept artificial fluoridation. The motion will be put into effect when equipment is set up. Only one part per million sodium silicofluoride will be added to the water.

TWO TEN-DAY INSTITUTES for nurses on Prenatal Education were held again this year at the University of Manitoba. The institutes, first organized in 1952 by Dr. E. L. Peters, director of the Bureau of Maternal and Child Hygiene for the province, were conducted this year by Miss I. Cooper, R.N., M.A., M.W.C. Eighteen nurses, representing the Provincial Health Department, the City Health Department, the Victorian Order of Nurses and a number of rural hospitals, attended the first institute in May. Fifteen nurses attended the October session.

THE MANITOBA BRANCH of the Canadian Institute for Sanitary Inspectors elected Denny Furness president at their annual meeting on November 17. J. J. Courteau was

re-elected secretary-treasurer. Other members elected to the executive were: F. K. Collins, A. Symko, G. Kemp, W. Noyes, D. Graham and J. Krisko. Committee chairmen are: G. Laing, A. Cross, F. K. Collins and D. Graham.

**PUBLIC HEALTH NURSES IN MANITOBA** attending their annual Christmas Institute, December 28 to 30 at the University of Manitoba, discussed nursing needs for the ageing. The topic covers one aspect of the long-term theme under study by the Institute: New Responsibilities in Public Health Nursing. The institute is under the direction of Miss M. E. Ring, senior nurse with the Department of Health.

**APPROXIMATELY 600 NORMAL** School students were examined by a team of ten medical directors, one medical officer, seven nurses and three technicians from the Health Department October 18 to 21 at the University of Manitoba. Seventy-five students in the Faculty of Education were examined December 8. The examinations are done, as a preventive measure, to discover any defects, and to show by actual demonstration how to conduct medical examinations among school children.

#### Ontario

**MASS SURVEY CHEST** x-ray units of the Division of Tuberculosis Prevention of the Ontario Department of Health recently completed their 3,000,000th free x-ray since inauguration of this service. "Operation Three Million" was completed during a mass survey in London.

Provincial, county and city officials, as well as representatives of interested voluntary groups, took part in the official ceremony when a London housewife became "Operation Three Million."

Effectiveness of the program as a case-finding and preventive medium is seen in the fact that since 1942 more than 2,000 cases of active tuberculosis have been discovered and brought under treatment, while close to 8,000 cases of inactive tuberculosis have been brought under regular supervision and observation. More than 60,000 cases of abnormalities of the chest, other than tuberculosis, have been reported.

**FIFTEEN MEMBERS** of the graduation class in the Ontario Sanitary Inspectors' Training Course received the Certificate in Sanitary Inspection (Canada)—at a graduating ceremony at the Ryerson Institute of Technology, Toronto, recently.

The meeting was chaired by Dr. D. S. Puffer, assistant chief medical officer of Health for the Province. The main address

was given by Dr. A. E. Berry, director of the Health Department's Division of Sanitary Engineering. The graduates were presented with their certificates by the Deputy Minister, Dr. J. T. Phair, after they had been introduced by Major A. S. O'Hara, consultant in sanitation for the department.

#### New Brunswick

**THE SEMI-ANNUAL** conference of directors of services and the district medical health officers took place in Fredericton on December 7 and 8. The meetings were chaired by Dr. J. A. Melanson, Chief Medical Officer, Department of Health and Social Services. The Hon. J. F. McInerney, M.D., Minister of Health and Social Services, was in attendance. At the conference, Dr. A. F. Chaisson, Director of Communicable Disease Control, outlined the most recent developments regarding poliomyelitis and the new vaccine. He informed the meeting of the Health Department's intention to purchase the Salk vaccine from the Connaught Medical Research Laboratories in a manner similar to the other provinces. He also spoke on the probable plan of administering the vaccine, indicating that children of specific age groups would be first to have the opportunity of receiving it. Dr. Chaisson stressed the fact that the Salk vaccine is still an experimental venture. Depending on the outcome of investigations for the tests now going on, the vaccine will probably be administered in New Brunswick starting in April 1955.

Mr. G. W. Crandemire, co-ordinator for the Rehabilitation of Disabled Persons, brought the conference up to date on the rehabilitation program in the province. He said that 54 disabled persons are now training under schedule R of the training agreement with the Federal Government. He mentioned that the setting up of a Provincial Advisory Committee on the rehabilitation of disabled persons is contemplated for the very near future.

Dr. R. J. Dolan, Director of Hospital Services and Cancer Control, outlined the plan to reduce the number of cancer clinics in the Province to provide more centralized and complete services. This new plan, approved by the Minister of Health, Dr. McInerney and the New Brunswick Medical Society, is expected to become effective April 1, 1955.

Dr. R. R. Prosser, Director of Mental Health, announced the transfer of the Fredericton Mental Health Clinic from King Street to the new Poliomyelitis Clinic and Health Centre attached to the Victoria Public Hospital. The suite of offices occupied in this

building has been planned specifically for a psychiatric clinic. They are modern in every way and are spacious. "It has long since been realized that a community psychiatric clinic, or out patient clinic, should be part and parcel of a general hospital," said Dr. Prosser. "Firstly, it causes the public to more readily accept the services offered by a psychiatric clinic, and secondly, it brings about a closer working relationship between psychiatry, and other branches of clinical medicine which have long been associated with the general hospital."

DR. JAMES C. MILLIGAN joined the medical staff of the Provincial Hospital, Campbellton, on December 1. Dr. Milligan was formerly engaged in private practice at Dorchester, N.B., as well as being medical officer for the penitentiary there.

MR. HANS G. FURTH arrived at the Provincial Hospital, Lancaster, on December 1 to begin his duties as a clinical psychologist in that institution. Mr. Furth was formerly with the Ontario Hospital in Kingston.

THE SEMI-ANNUAL CONFERENCE of public health nurses was held in Fredericton from December 7 to 10 inclusive. Miss Muriel Hunter, director of public health nursing, was chairman at the meetings. Two days of the conference were devoted to discussion on mental health. Those participating from the Mental Health division included Dr. C. H. Adair, director of the Fredericton Mental Health Clinic, and his staff members, Mr. Ralph Stymest, psychologist, and Mr. J. W. Donnachie, social worker. Also taking part were Mrs. Freda Vickery, supervisor of psychiatric social workers, Dr. John Nash, acting senior psychologist, and Dr. Frank Dunsworth, professor of psychiatry at Dalhousie University, who was a special guest at the conference. The remaining time of the conference was devoted to discussion of problems related to nurses' field work, under the guidance of Miss Lois Smith, field supervisor; and the nurse in relation to the school health program, with Miss Kathleen McLaggan, Teachers College, participating.

DR. D. F. V. BRUNSDON, newly appointed director of the Fredericton Regional Laboratory, has successfully completed his examination by the Royal College of Physicians and Surgeons of Canada for certification in pathology. Dr. Brunsdon is a graduate of Guy's Hospital, London, England, where he was assistant resident pathologist. He has been training in Saint John for the past nine months.

A MEETING OF THE superintendents of tuberculosis sanatoria in New Brunswick was held in Moncton on November 23 and 24 under the chairmanship of Dr. J. A. Melan-

son, chief medical officer. Present at the conference were the Hon. J. F. McInerney, M.D.; Dr. G. E. Maddison, director of tuberculosis control and president of the Canadian Tuberculosis Association; Dr. A. M. Clarke, assistant chief medical officer; and Dr. R. J. Dolan, director of hospital services and cancer control. Some of the items considered at the meeting were: a study of bed vacancies in New Brunswick Sanatoria, the problem of recalcitrant patients, and a review of present treatment methods. Superintendents of sanatoria included: Dr. C. W. Kelly, Jordan Memorial; Dr. P. M. Knox, Moncton Tuberculosis Hospital; Dr. L. L. Frenette, Notre Dame de Lourdes; Dr. R. J. Collins and Dr. L. MacPherson, Saint John Tuberculosis Hospital, and Dr. G. E. Gauvin, Saint Joseph's Sanatorium, St. Basile.

MR. A. E. WILBY, assistant registrar general of vital statistics, attended a two-day vital statistics conference in Ottawa on November 23 and 24.

THE HON. J. F. MCINERNEY, M.D., announced on December 3 that the Provincial Cabinet has approved the Federal-Provincial agreement providing allowances for permanently and totally disabled residents of New Brunswick. On December 10, Dr. McInerney announced the appointment of Mr. Leonard Lockhart as chairman of the newly created Provincial Advisory Committee on the Rehabilitation of Disabled persons. Mr. Lockhart, a widely known Moncton business man, was lauded by the Minister for his willingness to accept this highly responsible position without remuneration.

#### Changes in the Department of National Health and Welfare

SEVERAL IMPORTANT CHANGES have been announced in the organization of the Health Branch of the Department of National Health and Welfare.

DR. F. W. JACKSON has been appointed Director of Health Services. A former deputy minister of health for Manitoba, Dr. Jackson was called to Ottawa in 1948 to direct the federal government's National Health Programme. Since that time he has gained the complete confidence and co-operation of every province in the administration and allocation of the funds of the multi-million dollar health program. As Director of Health Services, he will be responsible for the department's activities in so far as they relate to assistance to the provinces.

Dr. Jackson will be assisted by Doctors K. C. Charron, B. D. B. Layton, G. E. Wride, and C. A. Roberts, with the rank of Principal Medical Officer.

Dr. Wride was director of hospital planning and administration in the Saskatchewan department of health before he was appointed assistant director of the federal department's Health Insurance Studies. He will be responsible for making recommendations to the Director of Health Services in matters of policy with relation to the federal health grants and their administration.

Dr. Wride will be assisted by Drs. J. H. Horowicz and J. B. Bundock. Dr. Horowicz, who becomes the Chief Administrative Officer of the Health Grants Programme, came to the health department in 1945 from the Department of National War Services. Dr. Bundock recently arrived from overseas where he had been serving with the Canadian Emigration Office at the Hague. Both men have had considerable legal training. Dr. Horowicz earned his doctor of laws degree at Krakow University, Poland, while Dr. Bundock has studied law at the Hague and also at Laval where he received his doctorate in medicine.

Dr. Roberts, a former superintendent of the Hospital for Nervous and Mental Diseases at St. John's, Newfoundland, is well known in Canadian psychiatric circles. In 1953 he was elected secretary of the Canadian Psychiatric Association and a fellow of

the American Psychiatric Association. In addition to his present duties as head of the department's Mental Health Division, he will now direct research in Health Insurance Studies. Dr. Roberts becomes a Principal Medical Officer.

Dr. Charron came to the federal government from Tanganyika in East Africa where he was medical specialist and adviser to the Tanganyikan government. He will be responsible for the divisions of Occupational Health and Public Health Engineering as well as for several special projects now under his supervision. Dr. Charron is also the department's representative on the National Advisory Committee on the Rehabilitation of Disabled Persons.

Dr. Layton entered the public service in 1945 after serving with the Canadian Army Overseas. Before joining the Army he was the assistant medical director for G. D. Searle and Company, Chicago. He will provide general supervision for the department's research programme.

The divisions of Quarantine, Immigration Medical and Sick Mariners Services, Civil Service Health, and Civil Aviation will now constitute a separate group under the supervision of Dr. R. G. Ratz as a Principal Medical Officer.

**The Canadian Public Health  
Association**  
*announces its*  
**FORTY-THIRD  
ANNUAL MEETING**  
**in the**  
**MACDONALD HOTEL,**  
**Edmonton, Alberta**  
**SEPTEMBER 6-8, 1955**

## EMPLOYMENT SERVICE

Advertisements regarding "positions available" and "personnel available" will be published in from one to three consecutive issues, depending upon the requirements of the agency or person concerned. They are limited to seventy words or less, with a confidential box number if desired. There is no charge for this service to members of the Association. Health agencies are charged a flat rate of \$10.00 for the advertisements (up to four consecutive issues) and for the service. The rate for non-members is \$5.00. The service includes confidential clearing of information between prospective employer and employee if desired.

**Public Health Nurses** required for generalized program with health unit, liberal car allowance and good personnel policies. Apply to R. S. Peat, M.D., Medical Officer of Health, Stormont, Dundas and Glengarry Health Unit, 104 Second Street West, Cornwall, Ontario. 12-3

**Sanitary Inspector** required for health unit. Liberal transportation arrangements and good personnel policies. For further details apply to R. S. Peat, M.D., Medical Officer of Health, Stormont, Dundas and Glengarry Health Unit, 104 Second Street West, Cornwall, Ontario. 12-3

**Public Health Nurse:** Athabasca Health Unit No. 18, Alberta, requires a public health nurse to work in a generalized public health program. Starting salary \$2,760-\$3,000 according to qualifications. Annual increment \$180. Blue Cross and pension plan available. Public health qualifications desirable but not essential. Address communications to Dr. H. M. Brand, Medical Officer of Health, Athabasca Health Unit No. 18, Athabasca, Alberta. 12-1

### NOTICE

Sanitary Inspector required by the Township of Scarboro. Salary range, \$2893.00 to \$3643 depending on experience and qualifications. Pension plan, group life insurance and Blue Cross plans in effect. Car allowance of 8c per mile. Applications in writing should be addressed to the undersigned before December 15th, 1954.

C. A. Tripp, Secretary,  
Board of Health,  
2001 Eglinton Ave. E.,  
Postal Station "H",  
Toronto 13.

### NURSES REQUIRED

By  
**The Provincial Government  
of Newfoundland  
Department of Health**

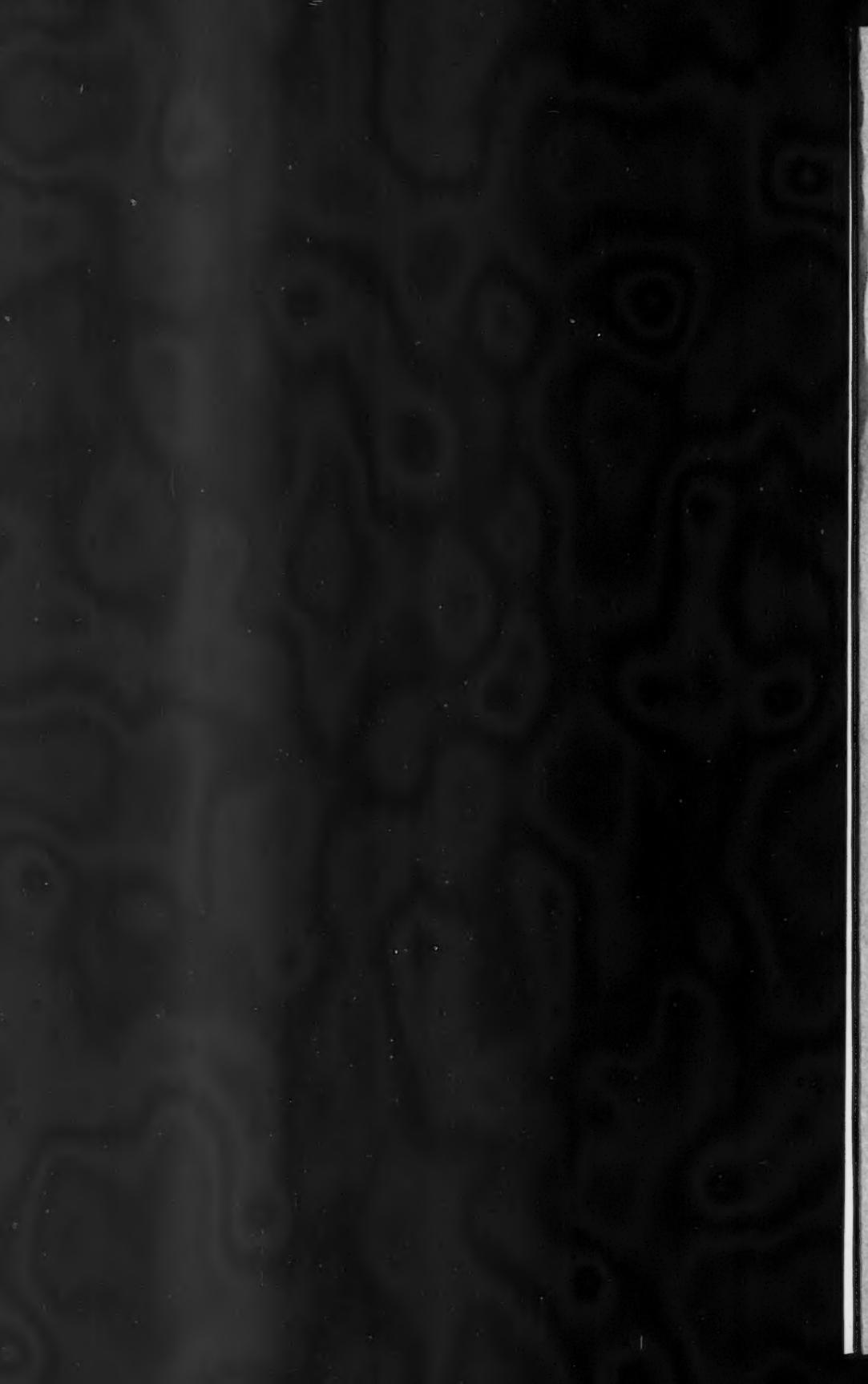
Registered Nurses are required for general duty as staff nurses in small hospitals ranging from six to thirty-two beds. Salary commences at \$2200.00 per annum on the scale \$2200-100-2300.

Accommodation is supplied in the hospitals at the rate of \$40.00 monthly. Uniforms and laundry services are provided free, annual vacation is twenty-four working days and sick leave with pay is also granted.

These hospitals are situated throughout the province in the more thickly populated settlements. The climate is temperate with its mild winters and cool summers where various types of recreation are available during both seasons.

Applications with full details should be addressed to **The Director of Nurses, Newfoundland Department of Health, St. John's, Newfoundland.** November 17, 1954.





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